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IMPROVING THE MILITARY HOUSEHOLD GOODS MOVEMENT PROGRAM

by

David Reid Putnam

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Thesis Advisor Dan C. Boger

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Three areas of the military household goods movement program are examined in this thesis: the household goods (HHG) inventory accountability process, freight forwarders' contributions to the moving industry, and the price and quality differences between blanket wrapped household goods shipments moved via moving van (code 1) and paper wrapped household goods shipments loaded and moved in crates (code 2).

The research questions examined in this thesis are: (1) what improvements can increase the efficiency of a military household goods inventory? (2) how do freight forwarders contribute to the efficiency and effectiveness of the moving industry? and, (3) should transportation officials consider using code 2 rather than code 1 for domestic moves?

Recommendations include: improving the handwritten household goods inventory by the incorporation of a system similar to *ALLFAX* and the Transportation Operational Personal Property Standard System (TOPS), establishing more legislative controls to prevent freight forwarders from attempting to monopolize the household goods moving industry, and developing a lockable pallet size container or the utilization of a standard 20- or 40-foot lightweight standard container for use in code 2 vice code 1 shipments.

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Improving the Military Household Goods Movement Program

by

David Reid Putnam
Lieutenant, U.S.N.
B.A., University of South Carolina, 1982

Submitted in partial fulfillment of the
requirements for the degree of

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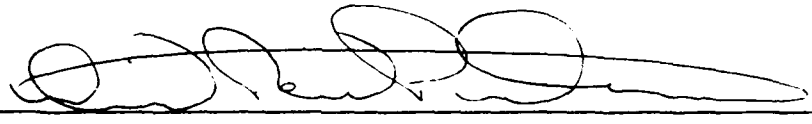
Author: 

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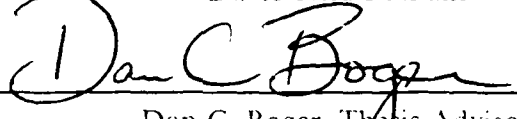
Approved by: 

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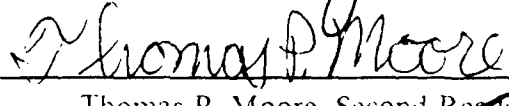

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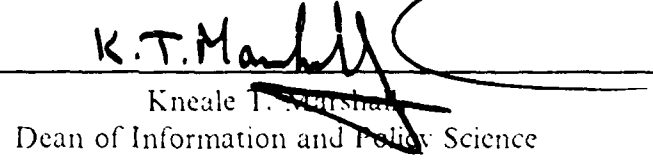


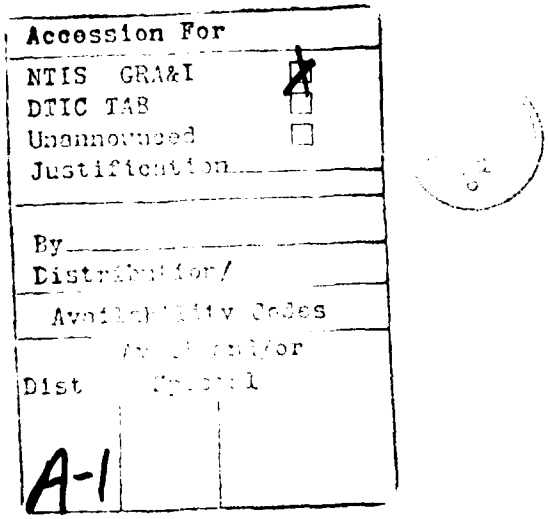
Kneale T. Marshall
Dean of Information and Policy Science

ABSTRACT

Three areas of the military household goods movement program are examined in this thesis: the household goods (HHG) inventory accountability process, freight forwarders' contributions to the moving industry, and the price and quality differences between blanket wrapped household goods shipments moved via moving van (code 1) and paper wrapped household goods shipments loaded and moved in crates (code 2).

The research questions examined in this thesis are: (1) what improvements can increase the efficiency of a military household goods inventory? (2) how do freight forwarders contribute to the efficiency and effectiveness of the moving industry? and (3) should transportation officials consider using code 2 rather than code 1 for domestic moves?

Recommendations include: improving the handwritten household goods inventory by the incorporation of a system similar to *ALLFAX* and the Transportation Operational Personal Property Standard System (TOPS), establishing more legislative controls to prevent freight forwarders from attempting to monopolize the household goods moving industry, and developing a lockable pallet size container or the utilization of a standard 20- or 40-foot lightweight standard container for use in code 2 vice code 1 shipments.



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ABBREVIATIONS AND ACRONYMS

AFB	Air Force Base
AIAG	Automotive Industry Action Group
AIM	Automatic Identification Manufactures
CARTS	Carrier Accepted Rates Report
CERS	Carrier Evaluation and Reporting System
CFAC	Common Financial and or Administrative Control
CONEX	Container Express
CONUS	Continental United States
COSMOS	Customers, Operations, Service, Master On-Line System
CP	Carrier Packed
CWT	Hundred Weight (Centum Weight)
DADS	Digitally-Assisted Dispatch System
DBMS	Data Base Management System
DLA	Defense Logistics Agency
DOD	Department of Defense
DOT	Department of Transportation
DPM	Direct Procurement Method
EMI	Electromagnetic Interference
EPROM	Erasable Programmable Read Only Memory
GAO	General Accounting Office
GBL	Government Bill of Lading
GP	General Purpose
GSA	General Services Administration
GTR	Government Transportation Request
HIBCC	Health Industry Business Communications Council
HHG	Household Goods
HHGFAA	Household Goods Forwarders Association of America, Inc.
HOPS	Hub Outbound Package Scan
HP	Hewlett-Packard
ICC	Interstate Commerce Commission
ICERS	International Carrier Evaluation and Reporting System

ISO	International Organization for Standardization
ITGBL	International Government Bill of Lading
ITO	Installation Transportation Officer
JTR	Joint Travel Regulations
LAPES	Low Altitude Parachute Extraction System
LCD	Liquid Crystal Display
LCG	LOGMARS Coordinating Group
LED	Light Emitting Diode
LOGMARS	Logistics Applications of Automated Marking and Reading Symbols
LTL	Less-than-Truckload
MG	Major General
MHI	Material Handling Institute
MILVAN	Military-owned Demountable Container
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
MT-PPM	MTMC Personal Property Office Code
NAVSUP	Naval Supply Systems Command
NTS	Non-Temporary Storage
NVOCC	Non-Vessel Operating Common Carrier
OASD	Office of Assistant Secretary of Defense
OIC	Officer-in-charge
PBO	Packed By Owner
PC	Personal Computer
PCS	Permanent Change of Station
PPMS	Personal Property Movement and Storage
PODS	Proof of Delivery Scan
POV	Privately Owned Vehicle
PUPS	Pick-Up Package Scan
QA	Quality Assurance
QC	Quality Control
RAM	Random Access Memory
RDD	Required Delivery Date
ROM	Read Only Memory
SAG	Senior Advisory Group
SCAC	Standard Carrier Alpha Code

SIPS	Station Inbound Package Scan
SIT	Storage-in-Transit
SOPS	Station Outbound Package Scan
SYSCOM	Systems Command
TC	Technical Committee
TDR	Transportation Discrepancy Report
TEU	Twenty-foot-equivalent-unit
TGBL	Through Government Bill of Lading
TL	Truckload
TO	Transportation Officer
TOPS	Transportation Operational Personal Property Standard System
TTU	Transportation Terminal Unit
UPC	Universal Product Code
USAF	United States Air Force
USD	Uniform Symbol Description
ZODIAC	Zip Originated Delivery Information Audit Cohort

GLOSSARY

Accessorial Service A service apart from the line-haul transportation incident to the movement of personal property. Examples of accessorial service include packing and containerization, provisions of cartons, containers and crates, and extra labor.

Average Cost Total cost, fixed plus variable, divided by total output.

Back-Haul The return movement of a vehicle from original destination to original origin.

Bill of Lading A transportation document that is the contract of carriage between the shipper and carrier; it provides a receipt for the goods tendered to the carrier and, in some cases, shows certificate of title.

Bogies Wheel units without chassis. Comes with single and tandem axles.

Broker An intermediary between the shipper and the carrier. The broker arranges transportation for shippers and represents carriers.

Capital The resources, or money, available for investing in assets that produce output.

Carrier A business entity that holds appropriate State or Federal permits or certificates for the movement of personal property.

Carrier, DOD-Approved Any carrier, as defined above, approved by the Commander, MTMC, for participation in the DOD Personal Property Shipment and Storage Program.

Carrier Liability A common carrier is liable for all loss, damage, and delay with the exception of acts of God, acts of a public enemy, acts of a public authority, acts of the shipper, and the inherent nature of the goods.

Certificate of Public Convenience and Necessity The grant of operating authority that is given to common carriers. A carrier must prove that a public need exists and that the carrier is fit, willing, and able to provide the needed service. The certificate may specify the commodities to be hauled, the area to be served, and the routes to be used.

Chassis A frame with wheels with devices for locking containers on. Comes in skeletal types, parallel frame types and perimeter frame types, among others.

CL Carload, a shipment weighing the minimum weight or more. A rate reduction is given for shipping a CL size shipment.

Codes of Service Definable types of service under the TGBL method.

a. Domestic Motor Van (Code 1). Movement of HHG in a motor van from origin residence in CONUS to destination residence in CONUS.

b. Domestic Container (Code 2). Movement of HHG in containers from origin residence in CONUS to destination residence in CONUS.

c. International Door-to-Door Container (Code 4). Movements of HHG in MTMC-approved door-to-door shipping containers (wooden boxes) whereby a carrier provides line-haul service from origin residence to ocean terminal, ocean transportation to port of discharge, and line-haul service to destination residence, all without rehandling of container contents.

Common Carrier A for-hire carrier that holds itself out to serve the general public at reasonable rates and without discrimination. The carrier must secure a certificate of public convenience and necessity to operate.

Consignee The receiver of a freight shipment, usually the buyer.

Consignor The sender of a freight shipment, usually the seller.

Containerization Stowage of general or special cargoes in a container for transport in the various modes.

Continental United States The 48 contiguous States, the District of Columbia, and Alaska.

Corner Castings Fittings situated on top and bottom of container corner posts designed for handling and securing a container.

Corner Posts Vertical frame components fitted at the corners of the container, integral with the corner fittings and connecting the roof and floor structures.

Cubic Capacity Carrying capacity of a container according to measurement in cubic feet.

Cube Out When a container has reached its volumetric capacity before reaching the permitted weigh limit.

Deregulation Revisions or complete elimination of economic regulations controlling transportation. The Motor Carrier Act of 1980 and the Staggers Act of 1980 revised the economic controls over motor carriers and railroads.

Direct Procurement Method A method of shipment in which the Government manages the shipment throughout. Packing, containerization, local drayage, and storage services are obtained from commercial firms under contractual arrangements or by the use of Government facilities and personnel.

Door-to-Door Through transportation of a container and its contents from consignor to consignee.

Economies of Scale The reduction in long run average cost as the size (scale) of the company increases.

Freight Forwarders A carrier that collects small shipments from shippers, consolidates the small shipments, and uses a basic mode to transport these consolidated shipments to a destination where the freight forwarder delivers the shipment to the consignee.

Gross Weight The weight of the cargo plus its packing.

Intermodal Used to denote ability of containers to change from rail to truck to ship in any order.

Household Goods Furniture, furnishings, or equipment; clothing; baggage; personal effects; professional books, papers, and equipment; and all other personal property associated with the home and person, as defined in the Joint Travel Regulations (JTR).

Hundredweight (cwt) 1/20th of a ton.

Interstate Commerce Commission An independent regulatory agency that implements federal economic regulations controlling railroads, motor carriers, pipelines, domestic water carriers, domestic surface freight forwarders, and brokers.

Lading The cargo carried in a transportation vehicle.

LCL Less than Container Load. A container which is loaded with consignments of cargo for more than one consignee or for more than one shipper.

Line-Haul The movement of freight over the road from one town or city (usually at a long distance) to another town or city.

LTL Less-Than-Truckload. A shipment weighing less than the minimum weight needed to use the lower truckload rate.

Maximum Cube A level of cube utilization that closely approximates the stated capacity of a container.

Measurement Ton 40 cubic feet.

Member The military or civilian employee of the DOD or an individual sponsored by the DOD for whom services are being provided at Government expense.

Me-Too Rate A rate filed by a competing carrier that is equal to a rate established by another carrier.

Mileage Rate A rate based upon the number of miles the commodity is shipped.

Military Traffic Management Command The single manager operating agency for military traffic, land transportation, and common-user ocean terminals.

Minimum Weight The shipment weight specified by the carrier's tariff as the minimum weight required to use the TL or CL rate; the rate discount volume.

Motor Carrier A term used to indicate a company which moves trailers via highway.

Motor Carrier Act of 1980 Relaxed requirements for entry into business as a truckline and, as a result, the number of new trucking applications in the first year of deregulation more than quadrupled. Many restrictions on truck routes, types of traffic carried, and areas served were eliminated.

Net Weight The weight of the cargo alone.

Owner-Operator A trucking operation in which the owner of the truck is also the driver.

Personal property Household goods, unaccompanied baggage, POV's, and mobile homes as defined in the Joint Travel Regulations (JTR).

SCAC (Standard Carrier Alphanumeric Code) Four position number assigned to initial linehaul carriers. Number assigned by the National Motor Freight Traffic Association. (i.e., AMRB is American Red Ball Transit Co.)

Segmented Rate A composite rate derived from the addition of several separate charges for services required to complete a domestic move. The segmented cost elements may include charges for line-haul transportation, packing and unpacking, additional transportation, a fixed shipment cost, appliance servicing, and other accessorial services normally associated with a domestic move.

Single-Factor Rate A single rate that combines charges for all services, except some accessorial services, associated with the movement of a shipment.

Required Delivery Date A specified calendar date (excluding Saturdays, Sundays, and U.S.holidays) on or before which the carrier agrees to offer the entire shipment of personal property for delivery to the member, member's agent, or responsible authority at destination.

Spreader A piece of equipment designed to lift containers by their corner castings.

Staggers Act of 1980 Made it easier for railroads to abandon non-remunerative lines, and for shippers and others to purchase lines proposed for abandonment.

Standard Carrier Alpha Code A four-digit alpha code assigned to each carrier by the National Motor Freight Traffic Association to identify that carrier in the various procedures and documents used in the DOD Personal Property Shipment and Storage Program.

Tare Weight The weight of a packing box when empty, or container when it is empty.

Tariff The charges, rates, and rules of transportation companies usually set forth in an industry publication.

Through Bill of Lading Bill of Lading covering receipt of cargo at the premises of the owner of the cargo for delivery to the ultimate consignee.

TL Truckload, a shipment weighing the minimum weight or more. A rate reduction is given for shipping a TL size shipment.

Ton-Mile A measure of output for freight transportation: it reflects the weight of the shipment and the distance it is hauled; a multiplication of tons hauled and distance traveled.

Tractor The motor unit that is used to pull trailers or vans. The complete coupled unit is called a "rig".

Traffic Management The management of those activities associated with buying and controlling transportation services for a shipper or consignee or both.

Trailer Used to describe a container together with a removable chassis or bogie.

Vanning A term sometimes used for stowing cargo in a container.

Waste Cube Where the cargo does not completely fill or fit the capacity or where the weight load limit of a container is reached in advance of the volumetric limit, thus leaving empty space in the container.

Weight Bumping Illegal addition of weight to a shipment inorder to increase the payment made to shipper. (i.e., weighing shipment and four people together)

Weight Ton (Same as measurement ton)

All definitions transcribed from [Ref. 1, 2 , 3, 4].

I. INTRODUCTION

A. BACKGROUND

Most members of the armed forces experience a Permanent Change of Station (PCS) move every two to three years. Most moves involve at least some damage or pilferage, some of which is not reported. Given the present state of the transportation industry after deregulation, can a service member expect to have his or her personal property moved from one duty station to another without fear of damage or theft? This loss and damage is an important element in the Department of Defense (DOD) household goods (HHG) expense. According to the Military Traffic Management Command (MTMC), during the 1987 fiscal year, over $910,000,000 was spent[1] on more than 752,000 personal property shipments and approximately 135,000 Privately Owned Vehicle (POV) shipments within the Air Force, Navy, Army and Marines. Of that total, 140,728 were personal property claims for $77,471,000 of loss or damage. [Ref. 1: p. 52] This means 18.7% of the shipments had ***reported*** loss or damage (measured as 140,728 claims 752,000 shipments). Some service members consider a broken table leg and smashed pictures not worth the trouble to try to obtain a reimbursement for a lower percentage of value from legal services. For the second quarter[2] of FY88, $230,000,000 was expended on more than 186,000 shipments. There were 21,717 claims at a cost of $11,741,000. [Ref. 2: p. 44] This means 11.7% of the shipment had ***reported*** loss or damage for one quarter.

B. OBJECTIVES

Three areas will be examined in this thesis. First, the household goods (HHG) inventory accountability process, second, freight forwarders' contributions to the moving industry, and third, price and quality differences between *(a)* blanket wrapped household goods shipments moved via moving van (code 1) and *(b)* paper wrapped household goods shipments loaded and moved in crates (code 2).

The household goods inventory is a valuable piece of paper. However, when it is unreadable and or confusing, its value diminishes quickly. Inventories have to be accu-

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1 This represents total charges paid on Personal Property Government Bill of Lading (PP GBL). This does not include any accessorial charges or adjustments paid to carriers under supplemental vouchers and excludes damage claims.

2 Data were unavailable for first quarter FY88.

rate and readable to be of any use to the service member. If the inventory is inaccurate and illegible, then the inventory benefits only the moving company. Chapter II will explore possible improvements to the handwritten inventory.

Freight forwarders are carriers that collect small, less-than-truckload (LTL) shipments from shippers, consolidate the small shipments into truck load (TL) shipments, and deliver the shipments to the consignee. But what would happen if the freight forwarders worked for the van lines? Could freight forwarders monopolize the household goods moving industry? Chapter III will investigate the activities of freight forwarders.

Code 1 and code 2 are two approved methods of moving household goods within the continental United States (CONUS). Each code has varying costs, advantages, and disadvantages. Edward P. Bocko, executive director of the Movers' and Warehousemen's Association stated in July of 1988, "Household goods are not constructed to be transported around the country in a van" [Ref. 7: p. 129]. Are there alternatives to using moving vans? Is there any difference in quality and price that service members should be aware of? Should a service member request code 2 over code 1? Chapter IV will explore code 1 versus code 2 shipments.

C. RESEARCH QUESTIONS

Three research questions are based upon the three objectives listed in section B:

1. What improvements can increase the efficiency of a military household goods inventory?
2. Do freight forwarders contribute to the efficiency and effectiveness of the moving industry?
3. Should transportation officials consider using code 2 rather than code 1 for domestic moves?

Based on the findings, this report will make recommendations for improvement to the Military Household Goods Movement Program.

D. ASSUMPTIONS

Some assumptions are made by the author based on personal experience. The author has experienced 12 Government contracted moves. This accounts for 24 different encounters with household goods moving personnel. Personal observations are based on this small sample size. Also, certain observations and opinions of the author were formulated over 17 years in conversations with other military and civilian personnel concerning their individual household goods shipment.

Data were derived from the Military Traffic Management Command's quarterly TMPR (Traffic Management Progress Report) and from computer generated reports. Code 1 and code 2 data were provided by MTMC's Management Support Group.

Interviews were conducted with various moving industry personnel, and related public relations materials, such as pamphlets and videos, were obtained by the author. Major contributors of information were Pictorial V-Marc of Indianapolis; Federal Express; Allied Van Lines; Mayflower Moving Company; Van-Pack of Richmond, California; and Cahoon Transfer and Storage of Salinas, California.

E. CONTENTS

The following chapter will discuss the household goods inventory. Chapter III will discuss freight forwarders and Chapter IV will discuss code 1 and code 2 shipments. Chapter V will state conclusions and make recommendations for improving the current military household goods movement program.

II. BARCODING AND AUTOMATED INVENTORY SYSTEMS

A. BARCODING

This chapter will explore how barcodes and inventories can be married together to form an efficient system of inventory control for household goods inventories. The days of handwritten inventories still exist and many people and companies have yet to make capital investments in the computerized inventory systems.

1. Description

The basic principle of barcodes is to represent information with a symbol comprised of black and white, wide and narrow lines. The lines are called bars and the complete symbol is called a Barcode Symbol Format. [Ref. 8: p. 3]

Barcodes are read by laser scanners, handheld light pens, or wands. The theory of operation is through the detection of contrast between the bar and the background color. Depending on the size of the bar, either wide or narrow, a computer will assign a binary value of 1 or 0. This idea is illustrated in Figure 1. [Ref. 8: p. 3]

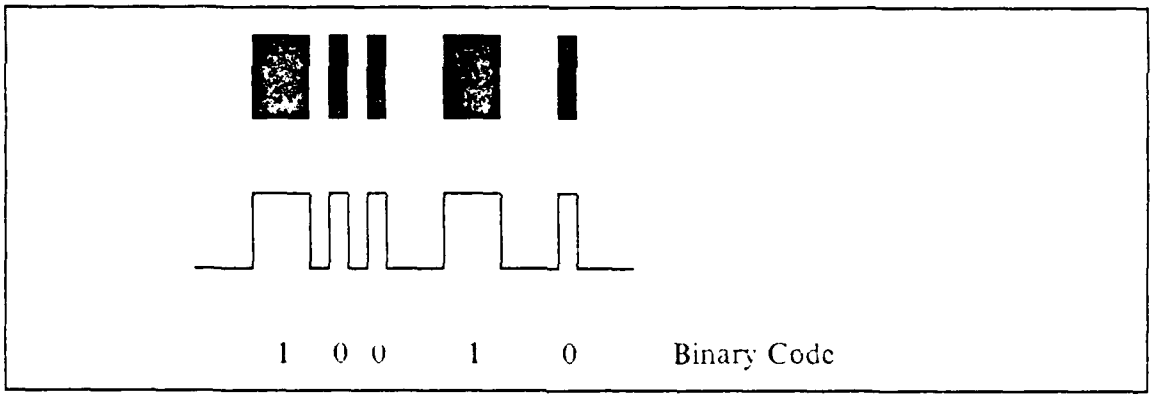


Figure 1. Sample Barcode.

Barcode symbols are either action or information codes. Action codes are used to perform or control a function. These type codes tend to be short and provide no additional information. Action codes generally are used in such applications as order picking and sorting. Information codes provide data such as the name of product, weight, date, serial number, etc. Three common information codes in use today are Interleaved 2 of 5 (AIM, USD-1), CODABAR 2 of 7, and Code 39 (AIM, USD-2).

Interleaved 2 of 5 uses a fixed number of characters. This type of barcode is used on shipping containers and various heavy industrial applications. The limitation is that it provides a maximum of only six digits and is illustrated in Figure 2 on page 6. CODABAR uses four bars and five intervening spaces to represent the digits zero through nine. This type of barcode is used mainly in libraries, hospitals, and in industrial and retail applications. Code 39, illustrated in Figure 3 on page 7, has nine black and white data elements and three of them are wide. [Ref. 8: p. 8] Code 39 is used by many industries and the Department of Defense. Code 39 has also been adopted as a voluntary standard by the Automotive Industry Action Group (AIAG) and by the Health Industry Business Communications Council (HIBCC) [Ref. 9].

Additional barcodes that are more complicated include Code 11, Code 49, Code 93, Code 128, ABC, AMES, MSI, and UPC. These barcode types will not be discussed.

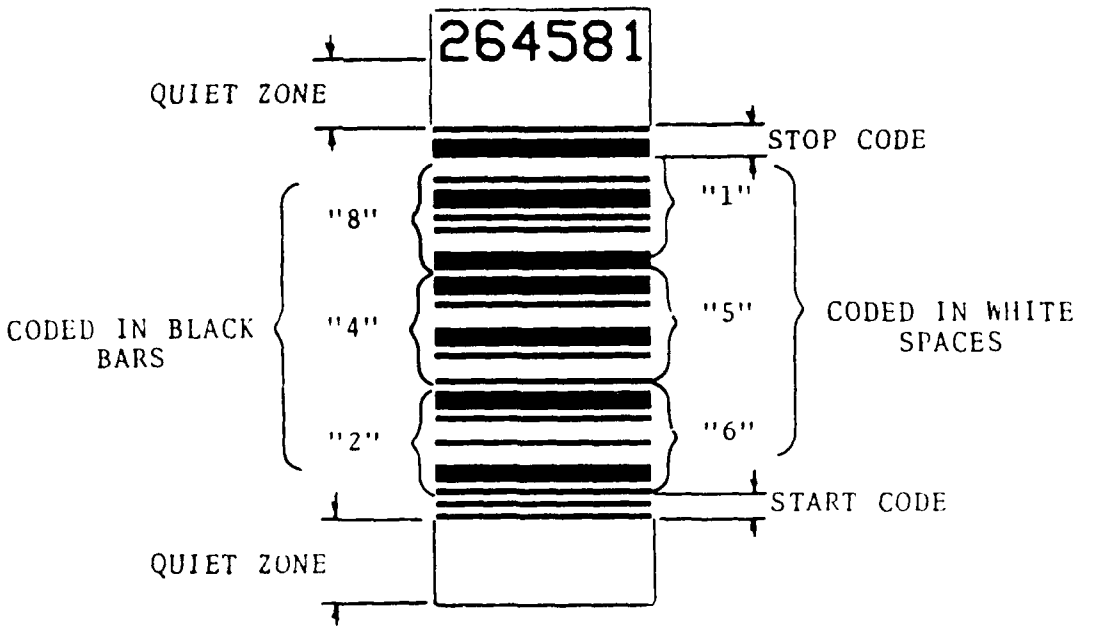
2. LOGMARS as a Barcoding System

a. Description

LOGMARS stands for Logistics Application of Automated Marking and Reading Symbols. MTMC developed LOGMARS to aid in managing and documenting cargo aboard transport vessels [Ref. 10: p. 7]. It uses barcoded labels on equipment to simplify and speed the cargo documentation procedures [Ref. 11: p. 2]. The system consist of commercial hardware and contracted software. Data is transferred from a portable barcode reader (PBCR) into the host computer. The system consist of the following components: [Ref. 10: p. 7].

1. Laser and infrared Barcode scanner, which includes:
   a. Calculator size PC with 64K Random Access Memory (RAM)
   b. Alpha-numeric keypad
2. IBM 3270 workstation, which includes:
   a. 384K RAM
   b. 5¼ inch floppy disk
   c. 10-megabyte Winchester disk drive
3. Intermec model 8413 bar code printer

The LOGMARS program was chartered in 1976 by the Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics. The main objectives were to establish a standard machine-readable symbology for marking packages and selected documentation, and to develop procedures for using the symbology. [Ref. 12: p. 1-1]



CHARACTERS		CODE				
		1	2	4	7	P
0	=	0	0	1	1	0
1	=	1	0	0	0	1
2	=	0	1	0	0	1
3	=	1	1	0	0	0
4	=	0	0	1	0	1
5	=	1	0	1	0	0
6	=	0	1	1	0	0
7	=	0	0	0	1	1
8	=	1	0	0	1	0
9	=	0	1	0	1	0

WIDE BARS AND SPACES = 3X = "1"
NARROW BARS AND SPACES = X = "0"

Figure 2. Interleaved 2 of 5 (AIM, USD-1) Barcode. Source: Mara, Charles E., "New Technology in Bar Code Printing", 1980 MHI Automated Material Handling and Storage Systems Conference Paper, 23 April 1980.

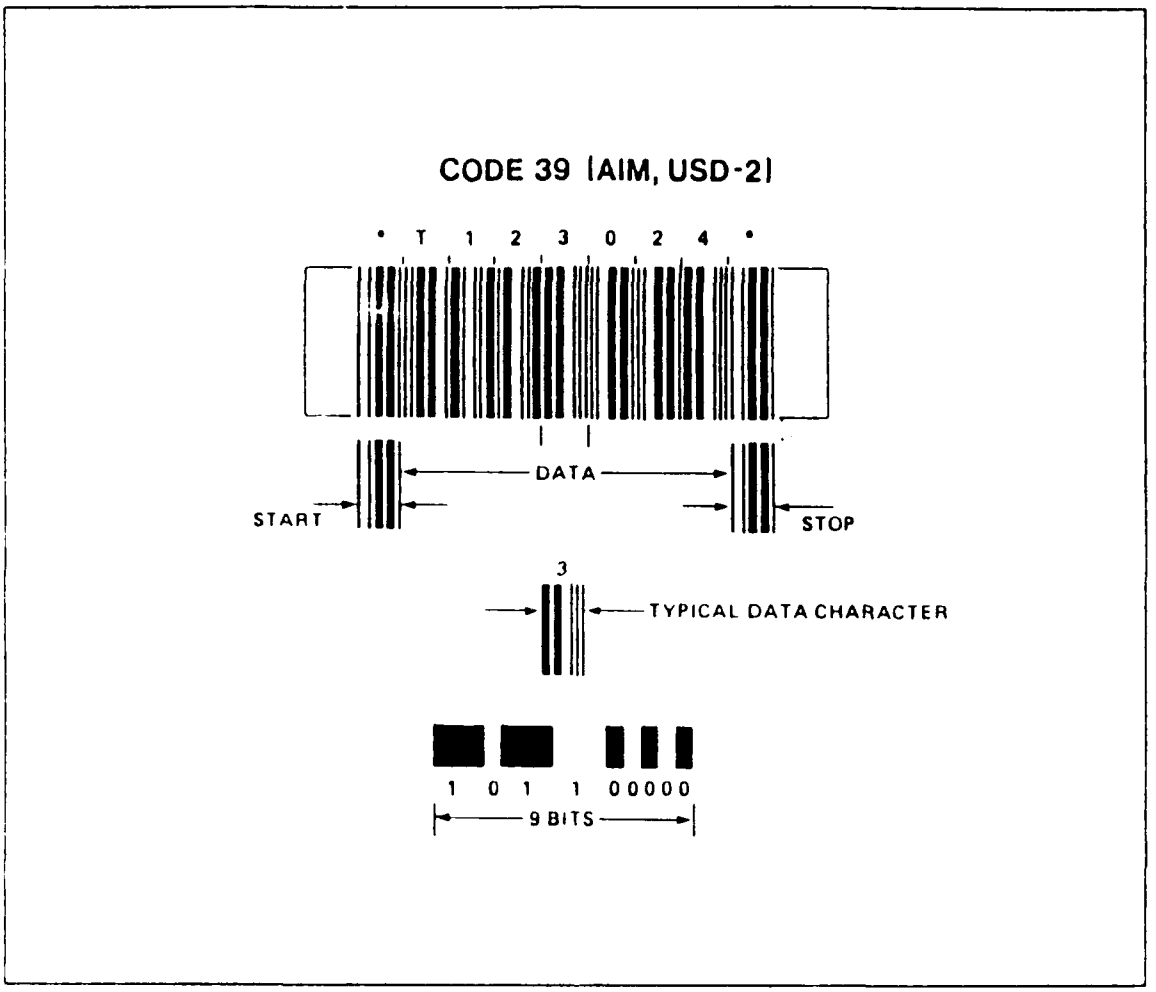


Figure 3. **Code 39 (AIM, USD-2) Barcode.** Source: Mara, Charles E., "New Technology in Bar Code Printing", 1980 MHI Automated Material Handling and Storage Systems Conference Paper, 23 April 1980.

The 3 of 9 barcode was approved in October 1980 as the standard DOD symbology for barcoding. Based on this, and the completion of the LOGMARS Joint Steering Group Final Report in September 1981, the military services and the Defense Logistics Agency (DLA) began a program to implement barcode technology in all applications that were feasible for cost effectiveness. A LOGMARS Senior Advisory Group (SAG) was formed to report to the Assistant Secretary of Defense for Installations and Logistics. A LOGMARS Coordinating Group (LCG) was formed to perform ongoing coordination of system development and testing. The LCG consisted of repre-

sentatives of all services, General Services Administration (GSA), OASD, and DLA. By direction of the Chief of Naval Material, the Naval Supply Systems Command (NAVSUP) was designated the lead Systems Command (SYSCOM) for the Navy. NAVSUP Instruction 5230.32 dated 22 February 1984 established the Navy LOGMARS Program. [Ref. 13]

Prototype tests of the LOGMARS 3 of 9 bar code were conducted in: [Ref. 14: p. 7]

- Shipping
- Wholesale receiving
- Wholesale inventory
- Location survey
- Ammunition segregation
- Ammunition inventory
- Service store issue
- Retail receiving
- Maintenance parts tracking

Initial Government testing of over 500,000 labels found only one incorrect character substitution per 3,379,458 characters read [Ref. 15: p. 32].

By using barcoding in logistics, a cost avoidance estimation in 1984 for the Army was predicted at $84 million over fiscal years 83-88 [Ref. 16: p. 5]. LOGMARS was also tested during the REFORGER 84 and 85 exercises and was adopted as the system of record during REFORGER 86. LOGMARS was considered a success during TEAM SPIRIT 86. Loading and cargo tracking were much easier and efficient.

There were a number of 'firsts' during TEAM SPIRIT 86: [Ref. 10: p. 8]

- The largest quantity of cargo, (2,200 pieces) was documented by LOGMARS in a single move.
- The use of LOGMARS was used to support another service.
- The use of LOGMARS was used to support a combined breakbulk and containerized cargo move.

LOGMARS has proven itself to be an asset in port operations [Ref. 17: p. 2].

3. Federal Express Barcoding Systems

a. "Positive Tracking"

Federal Express uses a barcoding method called the "Positive Tracking System." Each package contains a barcode label which represents the airbill number. Package whereabouts can be traced within 30 minutes. Every package barcode is physically scanned every time the package changes hands. [Ref. 18]

Customers, Operations, Service, Master On-Line System (COSMOS) is the name of the main data base at Federal Express. COSMOS stores and processes detailed customer and package information. It will also issue pickup requests and transmit the requests through the Federal Express telecommunications system to dispatchers. [Ref. 18]

A dispatcher will receive pickup requests on a Digitally-Assisted Dispatch System (DADS) terminal. Then the dispatcher will use the DADS network to transmit requests to couriers. Couriers receive this information on a DADS terminal in their Federal Express vans. [Ref. 18]

The COSMOS barcode label uses a 12-digit CODABAR symbol [Ref. 19: p. 1]. At pickup, the couriers use the handheld COSMOS IIB Super Tracker[3] to scan the barcode. The couriers then enter the type of service, handling code, and destination zip code information into Super Tracker. Super Tracker records the time of each transaction and responds with detailed sorting and routing information. This phase is called Pick-Up Package Scan. (PUPS). [Ref. 18]

When the couriers return to the vans, Super Tracker is placed in the DADS terminal. Pickup data is transmitted through the DADS terminal to COSMOS. Once in COSMOS, data is available for customer inquiries. [Ref. 18]

The next scan occurs just before packages are loaded into containers at the origin station. The packages are scanned using a COSMOS IIA terminal.[4] This phase is called Station Outbound Package Scan (SOPS). [Ref. 18]

This data is transmitted to COSMOS. When the packages arrive at Super Hub for sorting, a system called Zip Originated Delivery Information Audit Cohort (Zodiac) is used. A Zodiac label, which has sorting information, is applied to each package. Specially designed cameras locate and read labels and transmit information to the sort computer, giving instructions for sorting. When packages reach load positions, they are scanned using Super Tracker and the container numbers are entered. This phase is called Hub Outbound Package Scan (HOPS). [Ref. 18]

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3 The IIB has a two-line, 16-digit LCD (Liquid Crystal Display) display, built-in scanning, 32K of EPROM, and lots of RAM (Random Access Memory) storage [Ref. 19: p. 3].

4 The IIA has 32K of RAM, 24K of ROM EPROM, 15-segment 16-character LED (Light Emitting Diode) display, real-time clock, Nickel-Cadmium batteries, and a 39-key alphanumeric keyboard. The barcode scanner is a Welch-Allyn, six-mil, infrared lightpen with a customized waveshaping module [Ref. 19: p. 2].

Individual package information is transmitted to COSMOS. At destination, packages are scanned using a IIA terminal. This phase is called Station Inbound Package Scan (SIPS). [Ref. 18]

Before packages are loaded into a van for delivery, they are scanned with a Super Tracker. This provides destination package arrival information, including time arrived, and what van and route they are assigned. This individual package information is transmitted to COSMOS before vans leave the station. At delivery, couriers scan packages using Super Tracker and time is automatically recorded. The couriers enter recipients first initial and last name, and delivery status codes indicating the physical delivery location. This phase is called Proof Of Delivery Scan (PODS). [Ref. 18]

Super Tracker can also enter exception codes such as 'indirect delivery' or 'not in on delivery attempt'. Super Tracker is then inserted into a DADS terminal and package information is transmitted to COSMOS. Individual package information is available again for customer inquiries. [Ref. 18]

b. Micro-Wand

The COSMOS IIB Super Tracker is made by Hand Held Products of Charlotte, North Carolina. The corporate name for Super Tracker is Micro-Wand. Some other major users of the Micro-Wand are General Electric, McDonnell Douglas, GTE, and Honeywell. Figure 4 on page 11 illustrates Micro-Wand's exact size (7 x 1.8 x 1.3 inches).

B. CURRENT INVENTORY METHODS FOR DOD HHG MOVES

In order for moving and shipping companies to accurately record personal property, a standard inventory form is used. Figure 5 on page 12 is an example of the standard form in use today by many of the moving and shipping companies.

The carriers have been providing unreadable copies of household good inventories for many years. According to Ms. Ann Rice, Manager of Allied Van Lines Marketing Services, " ... manual inventories that the customer received was [sic] a fifth carbon copy which was almost completely illegible" [Ref. 20]. Claims for loss, damage, and unearned transportation cost are usually settled on the basis of the inventory [Ref. 21: p. 7]. The customer cannot claim something that cannot be read on the inventory. An example of a typical fifth carbon inventory sheet is illustrated in Figure 6 on page 13.

1. Inventory Process

The household goods inventory and moving process is basically divided into four parts:

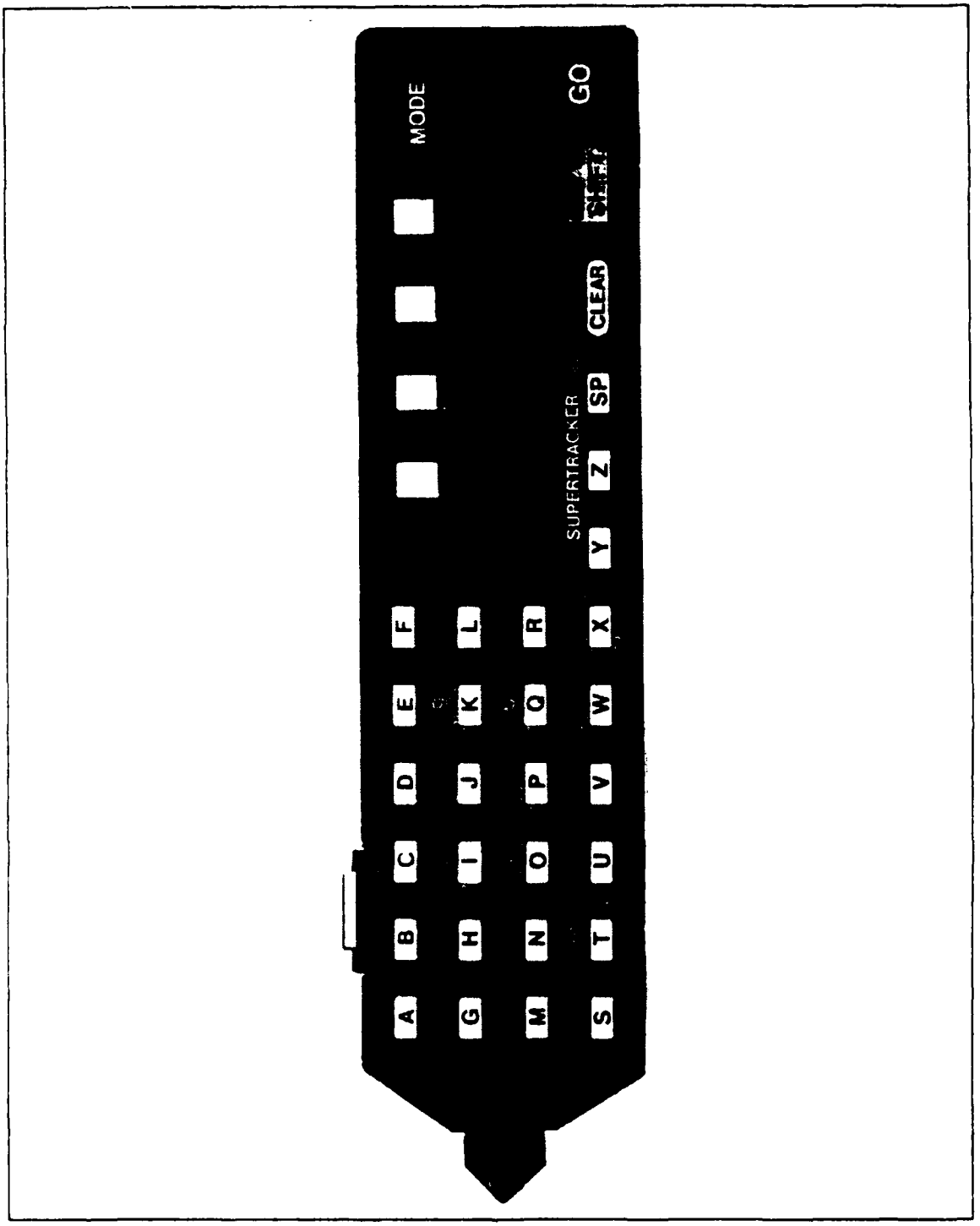

Figure 4. COSMOS IIB Super Tracker: Hand Held Products Micro-Wand. Source: Federal Express Information Package.

HOUSEHOLD GOODS DESCRIPTIVE INVENTORY

TAG LOT NO | PAGE NO | NO OF PAGES

TAG COLOR ____ NOS ____ THRU ____

AGENT | CARRIER'S REFERENCE NO

OWNER'S GRADE OR RATING AND NAME | CONTRACT OR GBL NO

ORIGIN LOADING ADDRESS ____ CITY ____ STATE ____ | GOVT SERVICE ORDER NO

DESTINATION | VAN NUMBER

DESCRIPTIVE SYMBOLS
B/W BLACK & WHITE TV
C COLOR TV
CP CARRIER PACKED
PBO PACKED BY OWNER
CD CARRIER DISASSEMBLED
DBO DISASSEMBLED BY OWNER
PB PROFESSIONAL BOOKS
PE PROFESSIONAL EQUIPMENT
PP PROFESSIONAL PAPERS

EXCEPTION SYMBOLS
BE BENT
BR BROKEN
BU BURNED
CH CHIPPED
CU CONTENTS & CONDITION UNKNOWN
D DENTED
F FADED
G GOUGED
L LOOSE
M MARRED
MI MILDEW
MO MOTHEATEN
R RUBBED
RU RUSTED
SC SCRATCHED
SH SHORT
SO SOILED
T TORN
W BADLY WORN
Z CRACKED

LOCATION SYMBOLS
1 ARM
2 BOTTOM
3 CORNER
4 FRONT
5 LEFT
6 LEGS
7 REAR
8 RIGHT
9 SIDE
10 TOP
11 VENEER
12 EDGE

NOTE THE OMISSION OF THESE SYMBOLS INDICATES GOOD CONDITION EXCEPT FOR NORMAL WEAR

ITEM NO	WHSE CK REF	ARTICLES	CONDITION AT ORIGIN	DELIVERY AT RESIDENCE CHECK ✓	EXCEPTIONS (IF ANY) AT DESTINATION
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
0					

REMARKS/EXCEPTIONS ____

IMPORTANT NOTICE TO SHIPPERS

THIS IS AN INVENTORY AND DESCRIPTION OF THIS SHIPMENT AT ORIGIN AND DESTINATION. ALL CLAIMS FOR MISSING ITEMS AND EXTERIOR DAMAGE ARE TO BE SUPPORTED BY EXCEPTIONS NOTED ABOVE.

WE HAVE CHECKED ALL THE ITEMS LISTED AND NUMBERED ____ TO ____ INCLUSIVE AND ACKNOWLEDGE THAT THIS IS A TRUE AND COMPLETE LIST OF THE GOODS TENDERED AND OF THE STATE OF THE GOODS RECEIVED

WARNING → BEFORE SIGNING — CHECK SHIPMENT, COUNT ITEMS AND DESCRIBE LOSS OR DAMAGE IN SPACE ON THE RIGHT ABOVE

AT ORIGIN	CONTRACTOR, CARRIER OR REPRESENTATIVE (DRIVER) (SIGNATURE)	DATE / TIME	AT DESTINATION	CONTRACTOR, CARRIER OR REPRESENTATIVE (DRIVER) (SIGNATURE)	DATE / TIME
	OWNER OR AUTHORIZED AGENT (SIGNATURE)	DATE / TIME		OWNER OR AUTHORIZED AGENT (SIGNATURE)	DATE / TIME

FORM 431 STOCK PRINTING CORP 1220 MAPLE AVE L A CALIF 90015

Figure 5. Standard Inventory Sheet: Actual Page Size 8½ x 11"

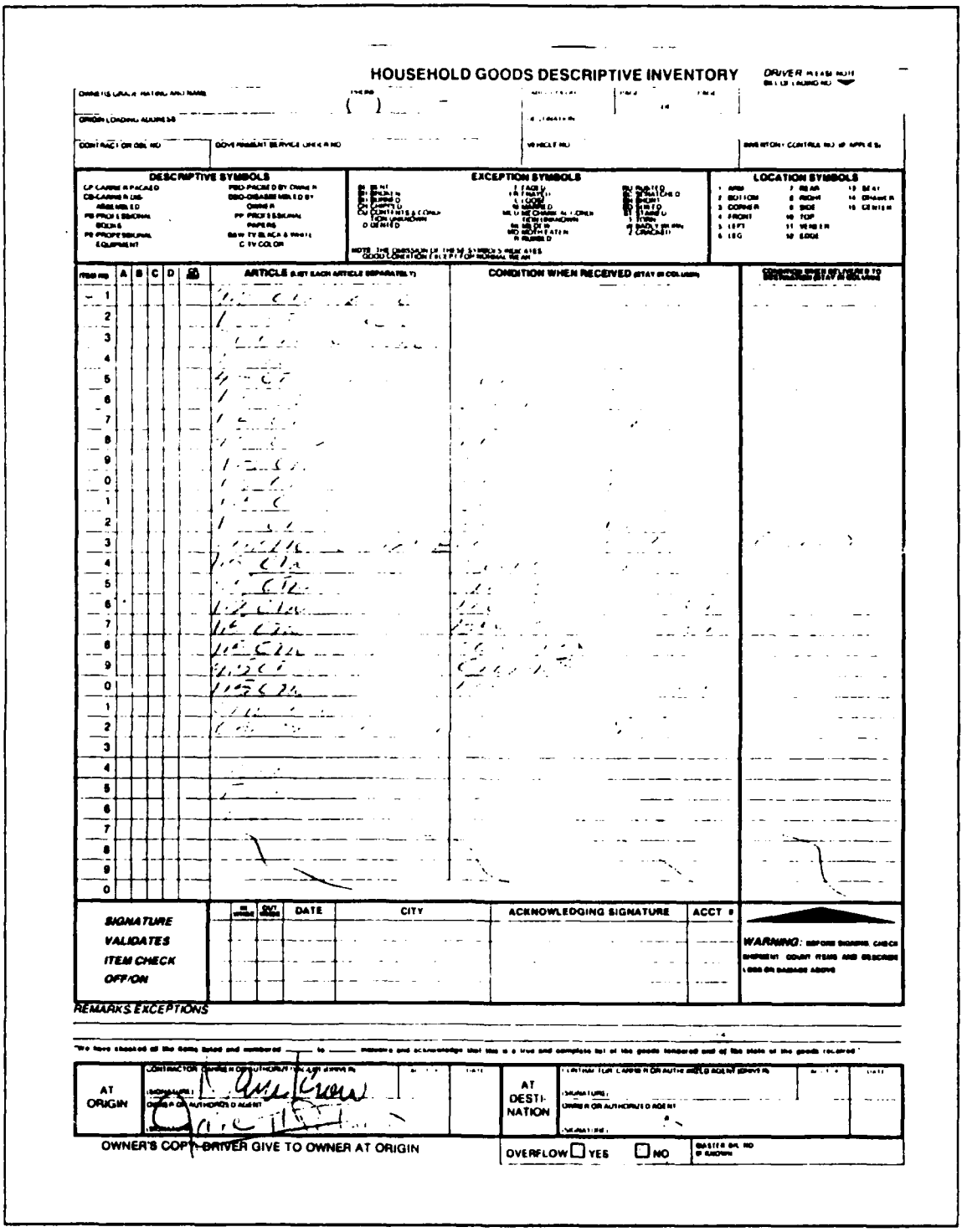

Figure 6. **Customer Copy of Inventory Sheet:** Actual Page Size 8½ x 11"

1. Prior to moving day, an initial walk-through inventory is taken to determine weight and cubic footage. This is used to determine the size of truck or number of crates needed for moving day.
2. The moving van driver conducts an inventory of the household goods as they are loaded on the truck. He also notes the condition of items at this time.
3. If household goods are going into storage, the warehousemen will verify the driver's inventory and note the condition of the goods.
4. When household goods are delivered to the final destination, another inventory is conducted to determine if there has been any loss and/or damage.

According to Allied Van Lines, all four steps lead to wasted man-hours and costly labor expenses [Ref. 20]. Preparing a household goods inventory is one of the most laborious chores in any move [Ref. 21: p. 7].

2. Quality Control

Prior to October 1988, the primary input document for loss and damage estimates was *DD Form 1781, Customer Satisfaction Report.* [Ref. 22: p. 32]. This form was handed to service members to fill out and return by mail. The Quality Control (QC) section at the Installation Transportation Office (ITO)[5] would then transfer a portion of the data over to *DD Form 2223 Shipment Evaluation and Inspection Record.* On the *DD Form 1781, Customer Satisfaction Report* the service member was asked to respond to ten questions. Question number one was, " Did mover give you an accurate and legible inventory? YES/NO."

DD Form 2223 Shipment Evaluation and Inspection Record is initiated at the origin shipping office, forwarded to the destination transportation office where move information is added, and after which the form is returned to the origin shipping office [Ref. 22: p. 27]. When the completed *DD Form 2223 Shipment Evaluation and Inspection Record* is returned to the origin shipping office, a copy is furnished to the carrier's home office. Thus, carriers receive feedback on each move. [Ref. 22: p. 27]. The only mention of an inventory on the *DD Form 2223 Shipment Evaluation and Inspection Record* is located in Section III. One block is allocated for a YES/NO response to the question " Prepared inventory properly?"

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5 ITO is the Army name for this office. The traffic management office (TMO) in the Air Force, the personal property shipping office in the Navy and Marine Corps, and the household goods shipping office in the Coast Guard perform the same functions.

Based on information from the *DD Form 2223 Shipment Evaluation and Inspection Record*, shipments are scored in the Carrier Evaluation and Reporting System[6] (CERS) and International CERS (ICERS). Carrier performance on each shipment is graded on a scale from 0 to 100. The performance factors considered are; (1) On time pickup and delivery, (2) Absence of loss or damage, (3) Customer satisfaction, (4) Shipment handling and (5) Administrative procedures. Point values are deducted based on the degree of importance assigned by MTMC [Ref. 24: p. 3]. For example, 8 points are deducted for a late delivery of 1 or 2 days whereas 40 points are deducted for a late delivery of 10 or more days [Ref. 24: p. 3]. An average score is computed for each carrier. Any carrier with a score below 50 cannot handle DOD shipments for at least 60 days from date of suspension. [Ref. 24: p. 2].

The current CERS program does not score tender of service or customer service elements [Ref. 22: p. 29]. Scoring these two items proved to be overly complex and too subjective for most ITO's to adequately manage [Ref. 22: p. 29].

In an attempt to correct poor evaluation feedback and procedures, *DD Form 1781* was replaced by the *DD Form 1840, Joint Statement of Loss or Damage at Delivery* and *DD Form 1840 (Reverse), Notice of Loss or Damage.* Since October 1, 1988, this form has been used for determining loss and damage amounts. At time of delivery, the carrier and the member fill out this form noting any loss or damage by item, and then the member estimates the total amount of loss and damage. This estimate is used on *DD Form 2223 Shipment Evaluation and Inspection Record.* [Ref. 22: p. 32]

The new *DD Form 1840* does not ask any questions concerning inventory, nor does it provide guidance to service members for annotating an improper or illegible inventory. MTMC does not receive feedback concerning customer satisfaction with regard to the inventory. Unless the destination office or on-site outgoing transportation office makes a comment on *DD Form 2223 Shipment Evaluation and Inspection Record* concerning a poor inventory, there is no knowledge of a poor inventory and the CERS ICERS score remains the same. [Ref. 25]

According to the Quality Control section at Fort Ord Transportation, "most shippers [service members] do not know what to put on the *DD Form 1840, Joint*

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6 CERS is a system of collecting household good carrier performance data, measuring actual performance against a standard, and using the results as a traffic distribution management tool. [Ref. 23: p. 25]

Statement of Loss or Damage at Delivery. There is no provision for grading the shipment, they [service members] are not qualified." [Ref. 25]

C. COMPUTERIZED HHG INVENTORIES IN THE PRIVATE SECTOR

The major moving companies such as Allied and Mayflower know the importance of the inventory with respect to customer satisfaction and efficiency. They have developed methods to better determine weights, control the inventory process, and save time. Some of the computerized methods are listed below.

1. FLEETBoard

NOTE: This report is not an endorsement for *FLEETBoard*® or any other particular system. Systems are referenced to support the thesis. These references are not intended to influence Government contracts nor are they an evaluation of the quality of the system.

The Mayflower Moving Company uses an electronic inventory and estimating system manufactured by V-Marc of Indianapolis called *FLEETBoard*® . This handheld system actually contains two systems in one. These two are called *FLEETBoard*® Shippers Inventory System and *FLEETBoard*® Estimator Inventory System. *FLEETBoard*® represents a fast and accurate method to inventory household goods. It is portable and can run on rechargeable C-cell batteries, household current, or a cigarette lighter. A picture of the *FLEETBoard*® is illustrated in Figure 7 on page 17. [Ref. 26]

Inventory lists are printed, in triplicate, at the customer's residence. An inventory printout sample is illustrated in Figure 8 on page 18, and the summary page is illustrated in Figure 9 on page 19. [Ref. 26]

a. FLEETBoard Shippers Inventory System

- Descriptive Inventory application program.
- Data Memory Module with enough reusable data storage to hold 700 household items at a time.
- Lists each item number, clearly describes each item, lists by room.
- Space for "check-off" at destination.
- Summary page lists all void and unused numbers, lists all standard carton sizes, totals for each type of carton for both PBO (Packed By Owner) and CP (Carrier Packed), totals number of cartons and total number of items moved.
- For military moves it will print carrier reference number, contract or PPGBL and Government Service Order Number.
- Keypad contains 156 pre-programmed item descriptions in alphabetical order and 64 item condition statements.

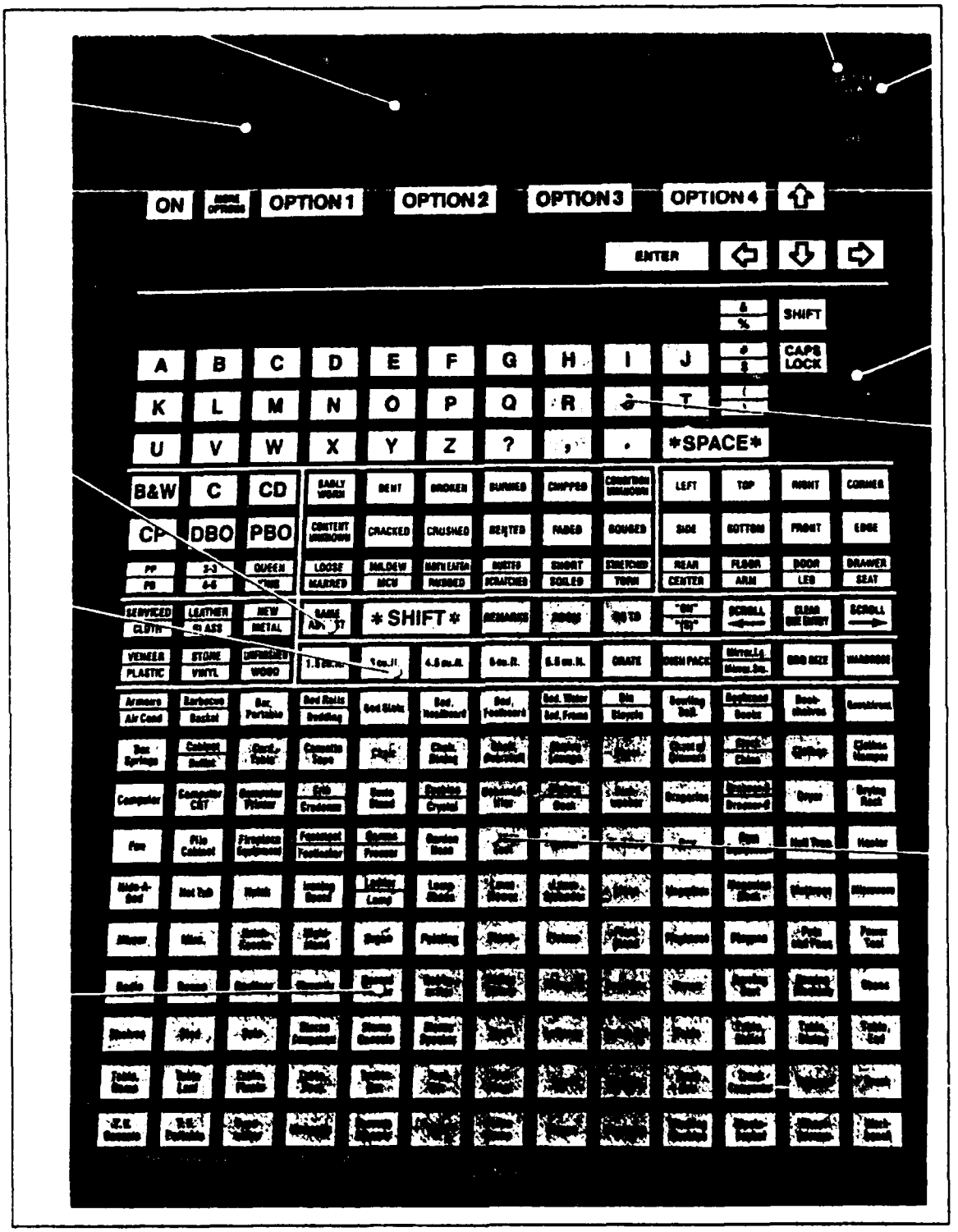

Figure 7. FLEETBoard Keypad: Actual Size 2¼ x 13¼ x 11"

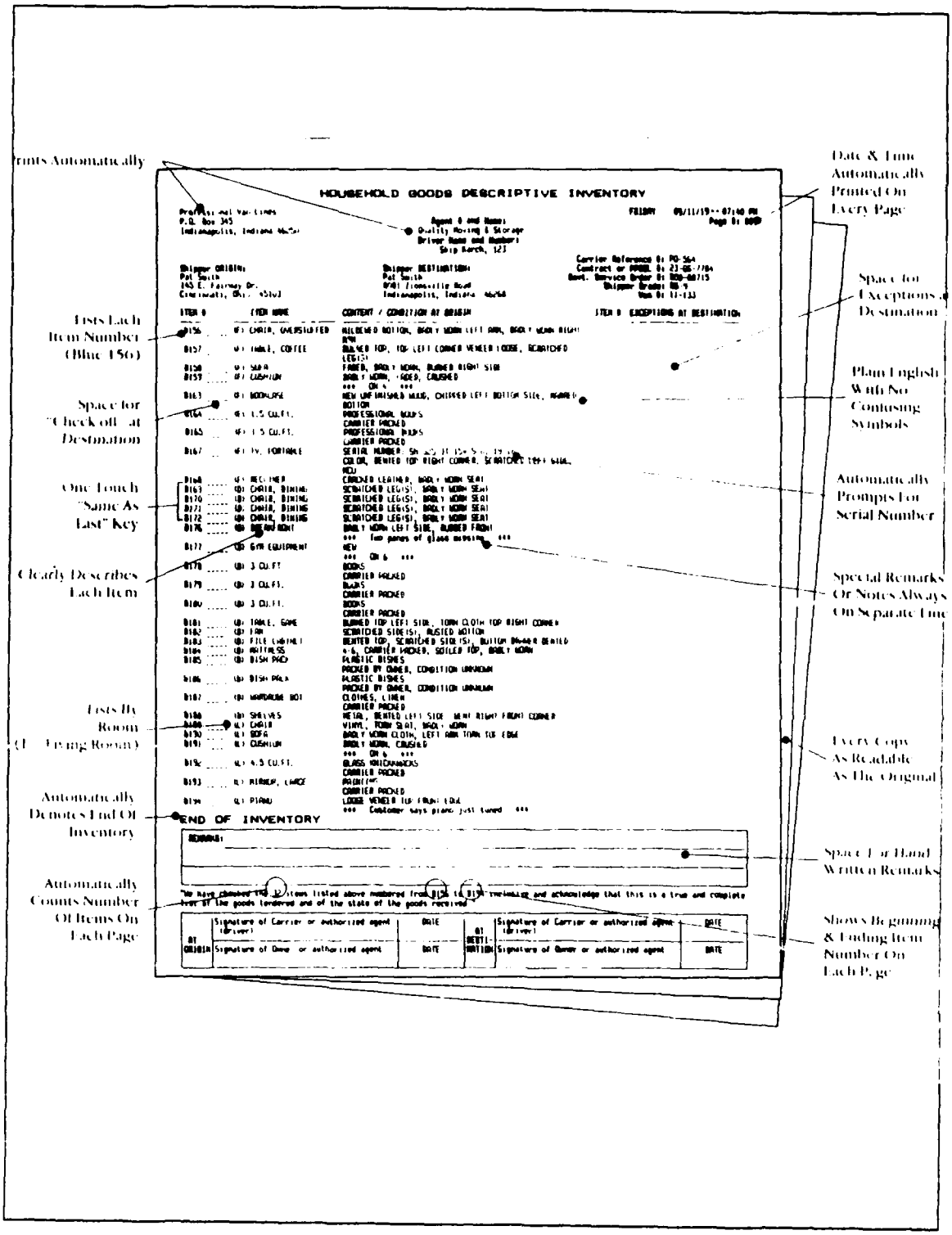

Figure 8. FLEETBoard Inventory Printout Sample: Actual Page Size 8½ x 11"

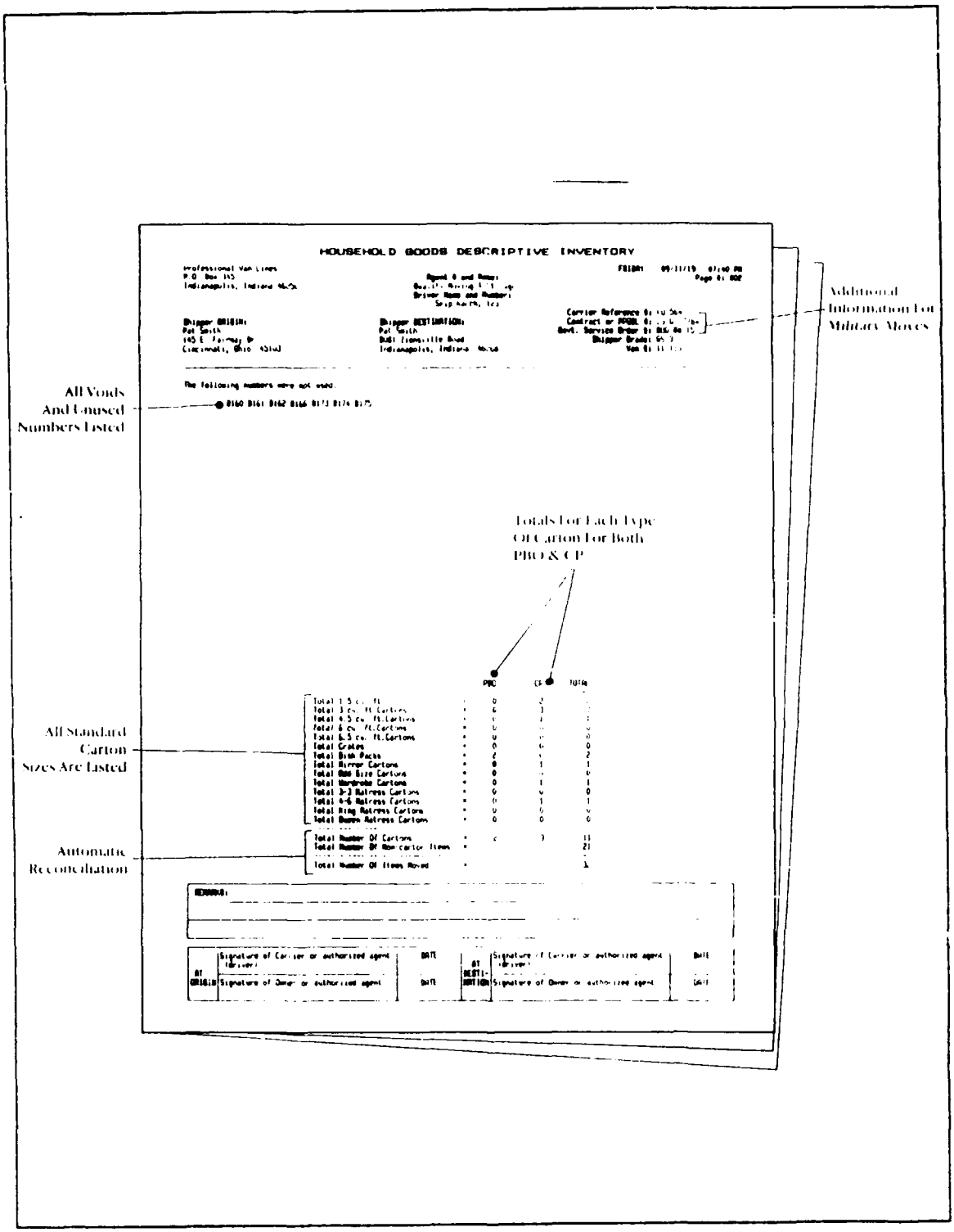

Figure 9. FLEETBoard Summary Page: Actual Page Size 8½ x 11"

- Touch pads for entering (Item) (Condition) (Location) of any personal property. For instance; (Chair) (Chipped) (Front)
- Typewriter keypad for data entries, comments or special instructions.
- Can be used as a simple calculator.
- Standard carton sizes are pre-programmed and automatically totalled.
- Uses Okidata 182 printer.

b. FLEETBoard Estimator Inventory System

- Contains entire 400F tariff,[7] records and stores individual tariff exceptions.
- Figures cube sheets by rooms identifying what **will** and **will not** be moved. An estimator printout sample is illustrated in Figure 10 on page 21.
- Discounts linehaul, line items, and bottom line prices.
- Portable, battery powered, and contains a Data Memory Module with enough reusable storage data to hold five separate estimates.
- Estimates total weight, additional cartons to be purchased and packed, and total cubes. The household inventory cube sheet is illustrated in Figure 11 on page 22.
- Totals cartons, non-carton items, sum of cartons and packing charges.
- Estimates total cost of move.
- Uses Diconix 150 InkJet Printer.

c. Disadvantages of both

- Data cannot be uploaded to a PC (Personal Computer) database nor is it possible to feed information into a network for telecommunication transfers.
- The *FLEETBoard*® Shippers Inventory System and the *FLEETBoard*® Estimator Inventory System are available only to individuals or companies at the Mayflower office in Indianapolis. The Inventory system costs $1,495 and the Estimator system costs $1,995. Both systems include operator manuals, printers, and carrying cases.
- *FLEETBoard*® does not use barcoding at the present time.

2. ALLFAX

NOTE: This report is not an endorsement for *ALLFAX* or any other particular system. Systems are referenced to support the thesis. These references are not intended to influence Government contracts nor are they an evaluation of the quality of the system.

ALLFAX is another electronic inventory and estimating system. It is designed to use barcodes. Allied's goals were to create efficiencies, lower costs, and increased

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7 Contains the current household goods tariffs for the commercial market. Does not include military tariffs which are contained in the MTMC Rate Solicitation 10.

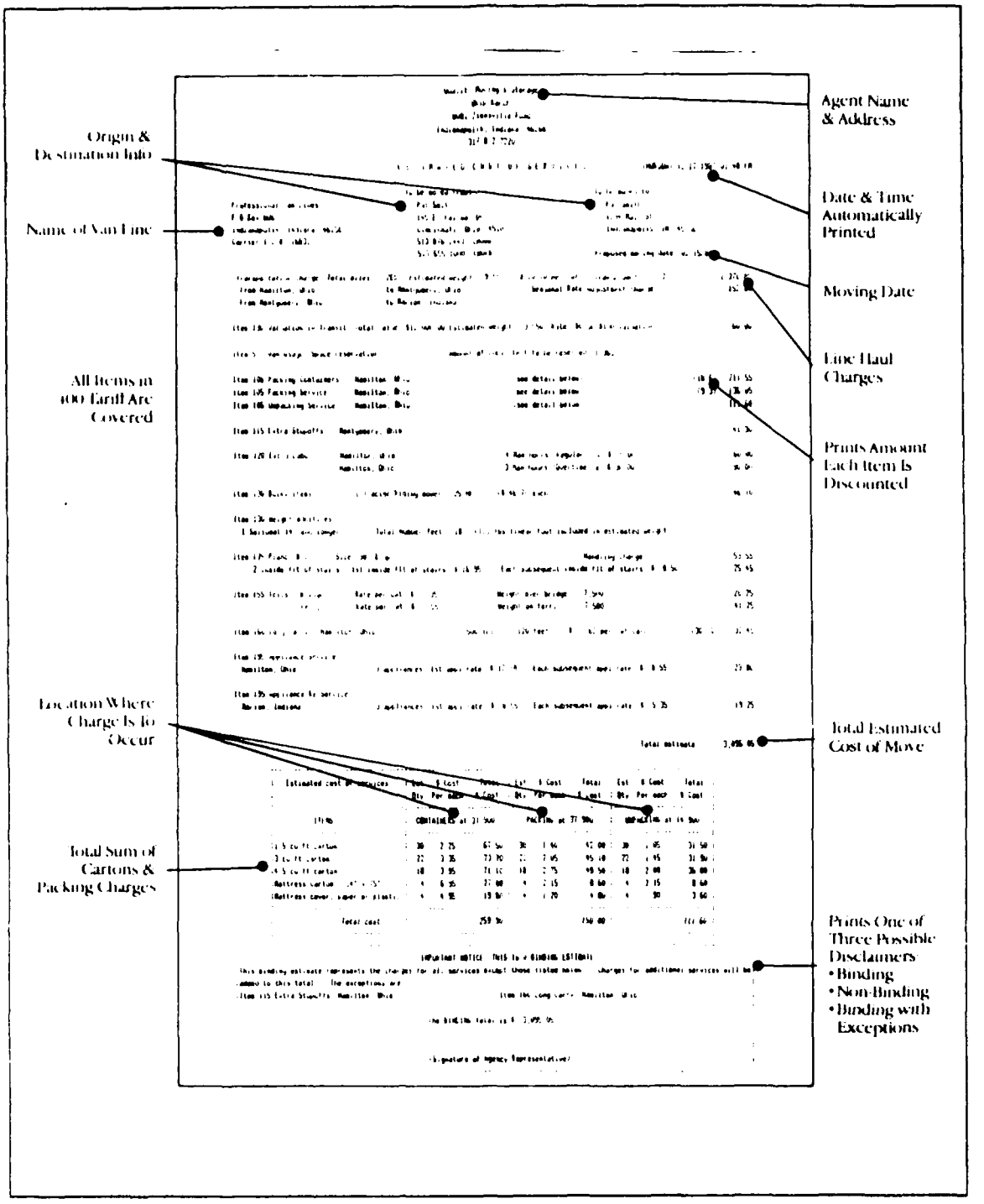

Figure 10. FLEETBoard Estimator Printout: Actual Page Size 8½ x 11"

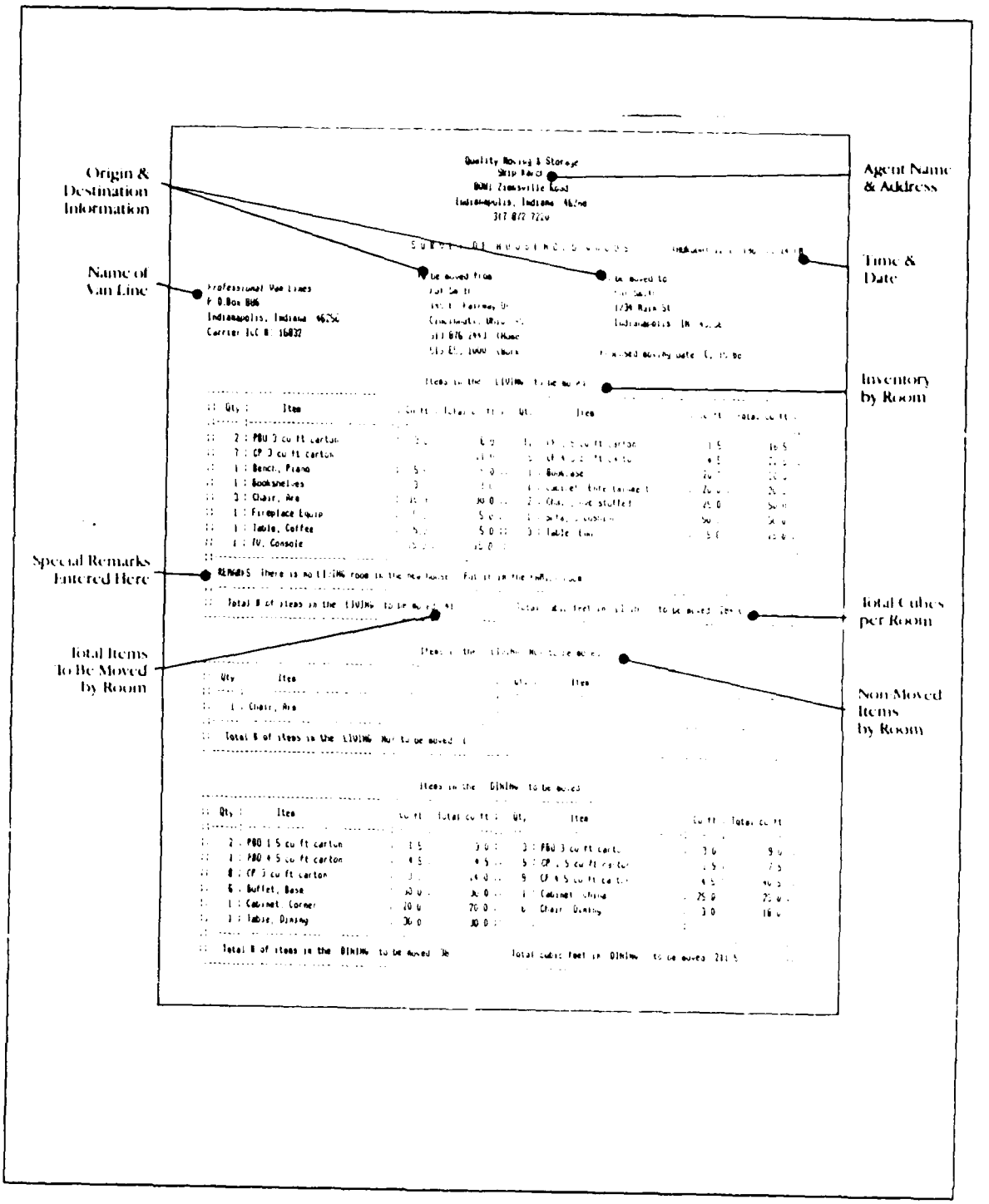

Figure 11. Household Inventory (Cube Sheet): Actual Page Size 8 ½ x 11"

sales. With the *ALLFAX* system, Allied has accomplished all three of these goals. [Ref. 20]

Movers' Computers, Inc. has been developing the *ALLFAX* system under contract with Allied Van Lines for the last four years. The barcode is a proprietary Hewlett-Packard binary barcode. [Ref. 27] *ALLFAX* uses Hewlett-Packard hardware, the CX 41 computer (HP 41 Advanced Calculator), an optical scanning wand which is connected to the computer, a ThinkJet Personal Printer, digital cassette drive (HP82161A) for data storage, and a Barcode Directory filled with optical barcodes corresponding to many items. [Ref. 28] All components operate on rechargeable batteries and can fit into an oversized briefcase. The software is an EPROM (Erasable Programmable Read Only Memory) attached to the top of the CX 41. [Ref. 20] Four types of codes are possible: a program code, data code, a code representing individual keys (called a paper keyboard) and a code representing keyboard sequences (direct execution code). [Ref. 29: p. 6.] One of the five pages in the Barcode Directory that Allied uses for furniture and office items is illustrated in Figure 12 on page 24 and the Name and Addresses sheet is illustrated in Figure 13 on page 25.

a. Features

When a room-by-room inventory is conducted, the name, cubic footage and condition of an item to be moved is entered into the handheld calculator with a lightpen. The shipper and customer are provided with a cubic foot estimate and a detailed household goods inventory. [Ref. 28] The *ALLFAX* system can also:

- Master Rate File is stored in EPROM.
- Calculate all charges for immediate feedback to customer and shipper.
- Store the inventory information on a cassette tape.
- Store and transfer data to a computer for additional transmission over communication lines.
- Allow for wand or manual entry of data.

[Ref. 28] The *ALLFAX* system is also portable and only weighs 7 ounces. Three major advantages include greater inventory weight estimation, inventory accuracy, and inventory speed.

According to one certified moving consultant who uses *ALLFAX* for estimating, the amount of time to complete a handwritten inventory worksheet and the amount of time to complete an *ALLFAX* inventory are roughly the same. The advantage to using *ALLFAX* is the ability to easily make corrections and changes and receive a

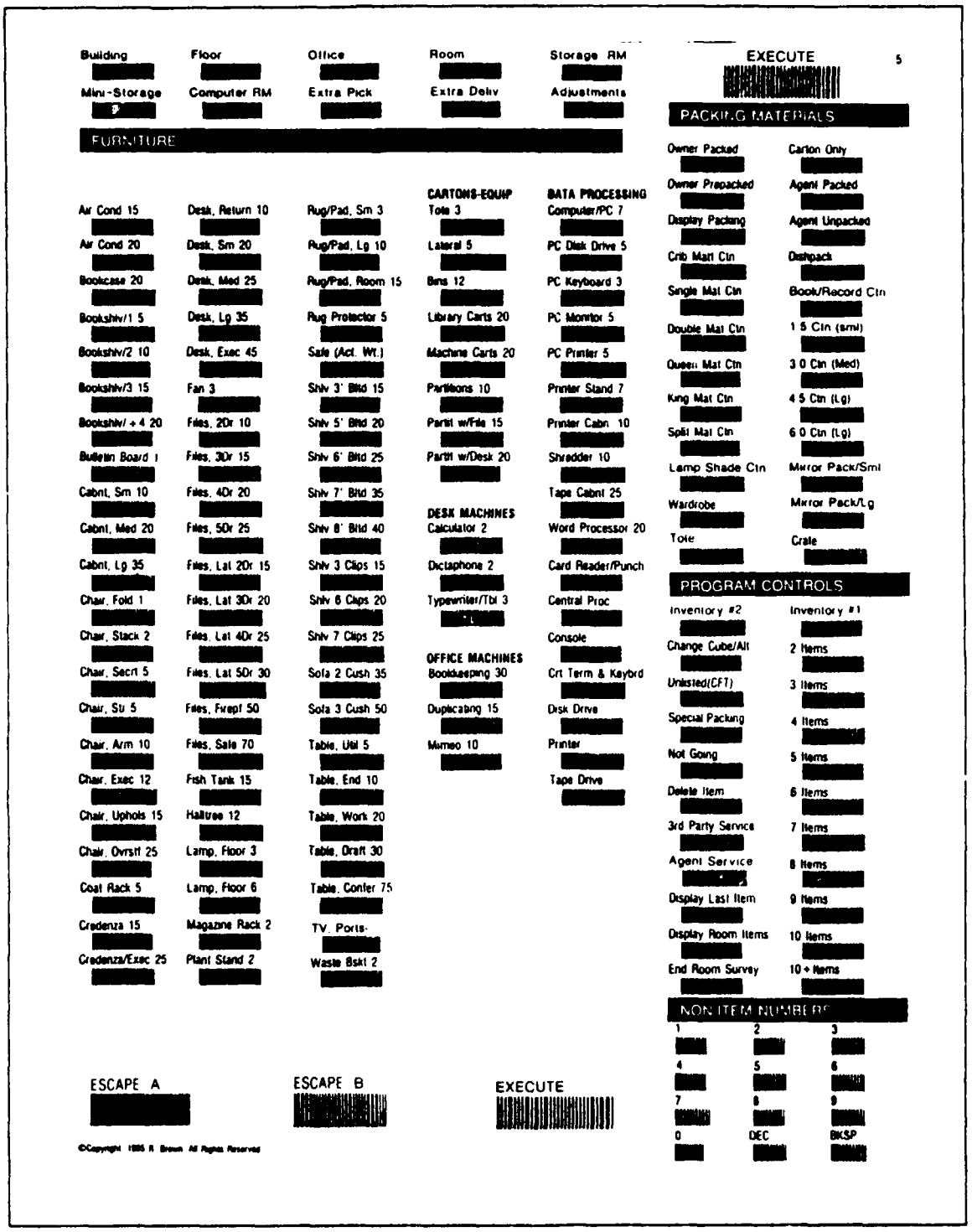

Figure 12. ALLFAX Barcode Directory: Actual Page Size 8½ x 11"

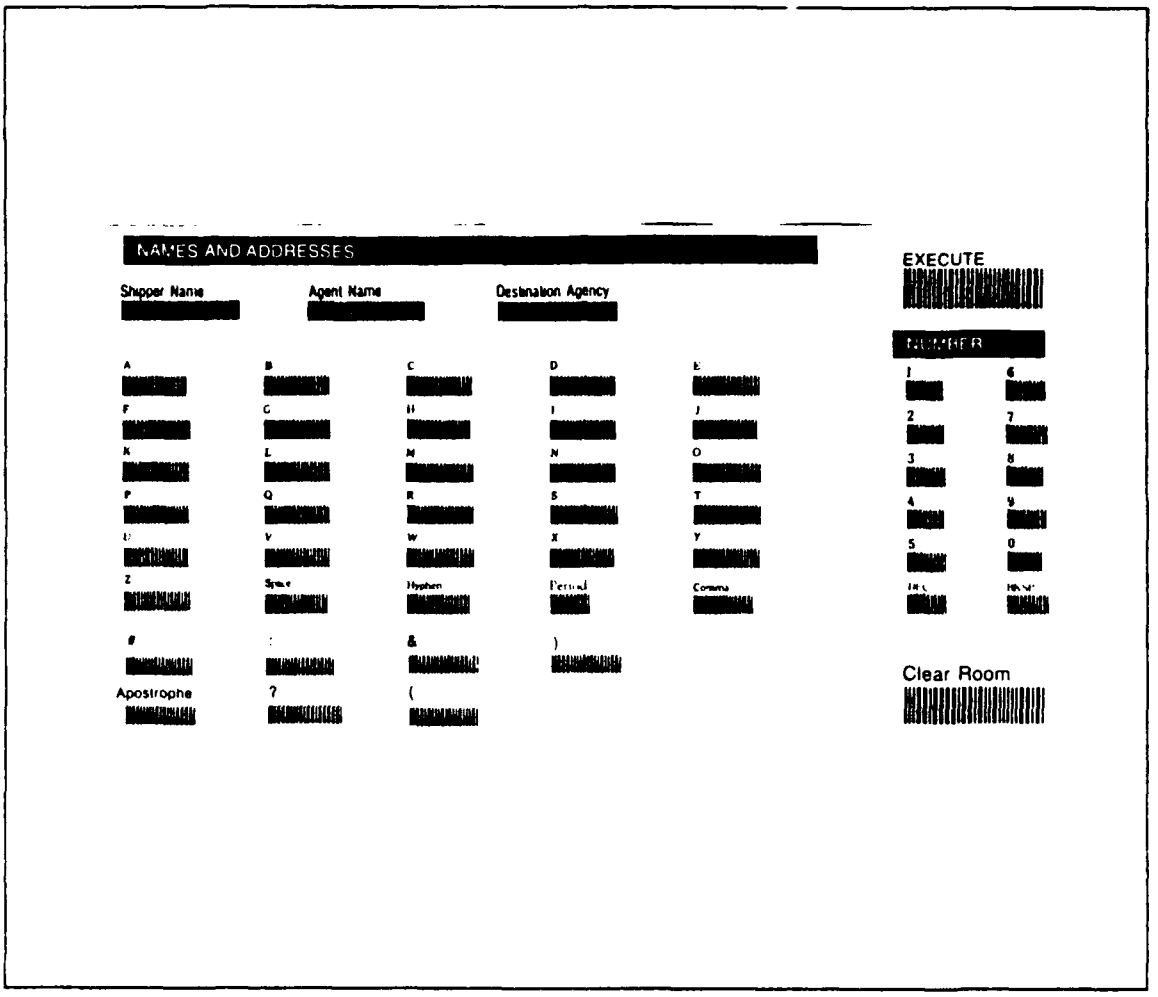

Figure 13. ALLFAX Barcode Directory: Actual Page Size 8½ x 11"

corrected copy immediately. Another advantage with *ALLFAX* is that it helps keep some customers honest. Some people will hide an item, or items, from the estimator, obtain a quote, and then try to ship the hidden item(s) when the movers arrive. *ALLFAX* will not let this happen if a proper estimate has been completed. When an estimate is taken room by room, every item is listed whether it is to be moved or not. When the driver arrives to perform a complete inventory and load the van, the *ALLFAX* printout will list what is NG (Not Going) and the driver will not load it. If the person states that an item is in fact supposed to go, then a new estimate or inventory is prepared. [Ref. 30]

Movers' Computers is also developing an office package to support sales personnel. This package will allow Allied agents to make appointments and store infor-

mation to a PC. A hard disk will also be included with this package. Items to be stored on the hard disk are:

- Mileage guides for U.S. cities
- 400F ICC tariffs
- Information for drivers on origin and destination counties with accessorial rates.[8]
- Download all information to the handheld system

The *ALLFAX* estimate can be uploaded in 23 seconds to a PC and will have the ability to store all data on data cassettes. A printout is then provided for the driver in the form of an inventory. There is also going to be an option to print, from the estimate, a list with blanks so that the customers can write (1) the value, (2) where items were purchased, and (3) date items were purchased. [Ref. 27] These three items are important when submitting claims for reimbursement when loss or damage occurs. An example of an *ALLFAX* inventory is illustrated in Figure 14 on page 27.

Movers' Computers, Inc. is concerned that Hewlett-Packard will stop producing the HP41 or replace it with a new model. Therefore, Movers' Computers, Inc. has made a decision to shift to a LOGMARS compatible computer system and barcoding scheme. A shift to Code 39 is planned for the summer of 1989. [Ref. 27]

D. TRANSPORTATION OPERATIONAL PERSONAL PROPERTY STANDARD SYSTEM (TOPS)

In order to quickly perform a household goods inventory, barcoding and laser scanners are required. One system being implemented by DOD, called the Transportation Operational Personal Property Standard System (TOPS), is a step in the right direction but could be improved. The Transportation Operational Personal Property Standard System (TOPS) is a system that will automate the operation of the personal property shipping offices of the Department of Defense [Ref. 31: p. 1].

The Office of the Assistant Secretary of Defense for Acquisition and Logistics wanted to increase productivity through fielding of a standard automated system and tasked MTMC with establishing the project management office [Ref. 32: p. 4]. The Project Manager is Army Lieutenant Colonel William Anderson. Major John Temple, TOPS Deputy Project Manager, stated,

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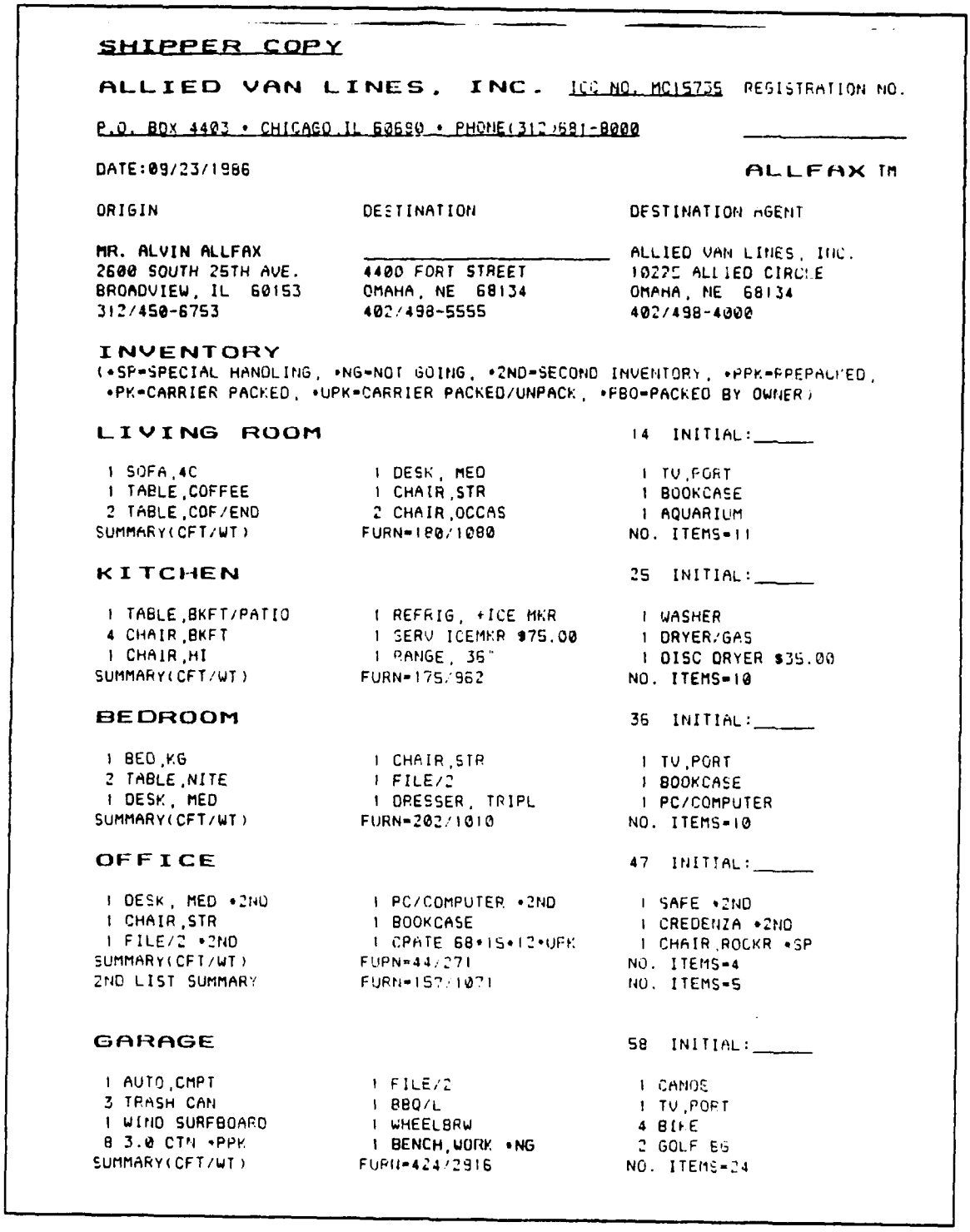
8 Accessorial rates are different in each county of the state. These rates include items such as unpacking costs, hauling up stairs, piano moves, etc. Line haul rates, which are not included, are specified by mileage and weight.



SHIPPER COPY

ALLIED VAN LINES, INC. ICC NO. MC15735 REGISTRATION NO. _____

P.O. BOX 4403 • CHICAGO,IL 60699 • PHONE(312)681-8000

DATE:09/23/1986 ALLFAX TM

ORIGIN	DESTINATION	DESTINATION AGENT
MR. ALVIN ALLFAX	_____	ALLIED VAN LINES, INC.
2600 SOUTH 25TH AVE.	4400 FORT STREET	10225 ALLIED CIRCLE
BROADVIEW, IL 60153	OMAHA, NE 68134	OMAHA, NE 68134
312/450-6753	402/498-5555	402/498-4000

INVENTORY

(•SP=SPECIAL HANDLING, •NG=NOT GOING, •2ND=SECOND INVENTORY, •PPK=PREPACKED, •PK=CARRIER PACKED, •UPK=CARRIER PACKED/UNPACK, •PBO=PACKED BY OWNER)

LIVING ROOM		14 INITIAL:_____
1 SOFA,4C	1 DESK, MED	1 TV,PORT
1 TABLE,COFFEE	1 CHAIR,STR	1 BOOKCASE
2 TABLE,COF/END	2 CHAIR,OCCAS	1 AQUARIUM
SUMMARY(CFT/WT)	FURN=180/1080	NO. ITEMS=11

KITCHEN		25 INITIAL:_____
1 TABLE,BKFT/PATIO	1 REFRIG, •ICE MKR	1 WASHER
4 CHAIR,BKFT	1 SERV ICEMKR $75.00	1 DRYER/GAS
1 CHAIR,HI	1 RANGE, 36"	1 DISC DRYER $35.00
SUMMARY(CFT/WT)	FURN=175/962	NO. ITEMS=10

BEDROOM		36 INITIAL:_____
1 BED,KG	1 CHAIR,STR	1 TV,PORT
2 TABLE,NITE	1 FILE/2	1 BOOKCASE
1 DESK, MED	1 DRESSER, TRIPL	1 PC/COMPUTER
SUMMARY(CFT/WT)	FURN=202/1010	NO. ITEMS=10

OFFICE		47 INITIAL:_____
1 DESK, MED •2ND	1 PC/COMPUTER •2ND	1 SAFE •2ND
1 CHAIR,STR	1 BOOKCASE	1 CREDENZA •2ND
1 FILE/2 •2ND	1 CRATE 68•1S•12•UPK	1 CHAIR,ROCKR •SP
SUMMARY(CFT/WT)	FURN=44/271	NO. ITEMS=4
2ND LIST SUMMARY	FURN=157/1071	NO. ITEMS=5

GARAGE		58 INITIAL:_____
1 AUTO,CMPT	1 FILE/2	1 CANOE
3 TRASH CAN	1 BBQ/L	1 TV,PORT
1 WIND SURFBOARD	1 WHEELBRW	4 BIKE
8 3.0 CTN •PPK	1 BENCH,WORK •NG	2 GOLF BG
SUMMARY(CFT/WT)	FURN=424/2916	NO. ITEMS=24

Figure 14. ALLFAX Shipper's Inventory Copy: Actual Page Size 8½ x 11"

> One of the primary goals of TOPS is to eliminate administrative burden of the personal property program through standard automation process.[sic] Personal property activities serve the military and civilian members of all Services and operate within the same Joint Federal Travel Regulation and DOD directives. TOPS allows each Service to deal with their own unique requirements and those of other Services uniformly. The result is greater efficiency, increased economy of resources and improved service to our members. [Ref. 32: p. 4]

After developing system requirements and proposals for hardware, the Project Manager contracted with the Unisys Corporation for the 5000/80 family of equipment for TOPS. [Ref. 31: p. 2] The data base management system (DBMS) selected for TOPS was the ORACLE V system. [Ref. 31: p. 2]

According to the TOPS Project Manager, TOPS will:

- Maintain Government bill of lading (GBL), storage-in-transit (SIT), and service order logs
- Maintain required delivery date (RDD), SIT, non-temporary storage (NTS), and quality assurance (QA) suspense files
- Electronically transfer shipment information between origin and destination
- Print most personal property shipping documents
- Maintain prior shipment records
- Calculate weight entitlements
- Facilitate code mode selection
- Maintain tonnage distribution rosters
- Generate DD 619-1's for SIT and reweighs
- Generate all Direct Procurement Method (DPM) and NTS invoices
- Maintain rate and letter of intent files [Ref. 31: p. 2]

E. SUMMARY

This chapter described basic barcoding, inventory control, and household good inventories. DOD uses the LOGMARS system to aid in managing and documenting cargo in an expeditious manner with the use of laser scanners and barcode technology. Federal Express uses the Positive Tracking System to trace a package location quickly with the use of laser scanners, barcode technology, and telecommunications. The moving industry uses two different methods of conducting a household goods inventory, manual and computerized. By consolidating portions of all three into the military household goods movement program, a viable control and accounting method for military household goods shipments would be possible.

Numerous van lines and independent operators do not desire to invest large sums of money into the computerized inventory systems. Incentives for the small companies and independents are minimal for using such systems as *FLEETBoard®* or *ALLFAX*. Currently there are no plans for the Government to implement computerized inventory systems into the military household goods movement program. Perhaps if the Government offered increased tariff rates, which means rate increases and more profits to companies using the computerized inventories, more van lines and agents would make the initial capital investments in computerized inventories. The next chapter will discuss freight forwarders and their role in the moving industry.

III. FREIGHT FORWARDERS: BACKGROUND AND PROBLEMS

A. FREIGHT FORWARDERS

Freight forwarders are carriers that collect small, less than truckload (LTL) shipments from shippers, consolidate the small shipments into truck load (TL) shipments, and deliver the shipments to the consignee. The Interstate Commerce Commission defines a freight forwarder as a person who "... assembles and consolidates, or provides for assembling and consolidating, shipments and performs or provides for break-bulk and distribution operations of the shipments." Forwarders make their profits on spreads which are the differences in rates charged to shippers for small shipments and the volume discount rates charged by rail, motor, and water carriers. [Ref. 33: p. 159]

In May of 1942, Congress passed the Freight Forwarders Act. With this Act the ICC gained control over surface freight forwarders [Ref. 34: p. 272]. This was in response to discriminatory pricing and related abuses that had become common in freight forwarding activities [Ref. 34: p. 397]. Forwarders were not permitted to own or control carriers subject to Parts I, II, or III of the Interstate Commerce Act, but ownership, or managerial control, of freight forwarders was available to the water and motor carriers and the railroads. [Ref. 34: p. 272]

In a 1950 amendment to the Interstate Commerce Act, freight forwarders were declared to be common carriers [Ref. 34: p. 272]. Since 1942, when Congress regulated the indirect carriers, the ICC has allowed the freight forwarders and common carrier trucking to establish contracts.[9] The surface forwarders, who use motor vehicles over intercity routes, also have authority to negotiate contract rates with railroads according to the Staggers Rail Act of 1980. [Ref. 34: p. 139]

Some freight forwarders are issuing their own through bills of lading. This type of freight forwarder is known as a non-vessel operating common carrier (NVOCC). The NVOCC assembles LTL shipments into a single container for delivery to an ocean carrier. Once the container arrives at the destination, the NVOCC will break down the container, redistribute his LTL shipments, and deliver to the various consignees. [Ref. 35: p. 40]

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9 Freight forwarders normally pay the published rates of the direct carriers.

The problem of liability now arises. Who is responsible to the consignors for the cargo? With deregulation, carriers now have more leeway in establishing their liability requirements. According to John Mahoney of the ENO Foundation for Transportation, " ... giving the carriers more flexibility with liability rules permits them to lower their costs, and thereby pass the benefits onto their customers in terms of carriage rates." [Ref. 36: p. 75]

Originally, freight forwarders were liable only for cargo loss and damage when the cargo was in their actual custody or control. Now with the NVOCCs and through bills of lading, the freight forwarders are responsible from start to finish. [Ref. 35: p. 40]

Thomas Denniston, vice president and general council of Bradshaw and Associates Ltd., thinks that modern freight forwarders are more than mere forwarding agents who arrange the transportation of goods on behalf of others. He says, "Today's freight forwarders are principals investing in containers, chassis, tractors, depots, and handling equipment." [Ref. 35: p. 40]

B. THE HHG INDUSTRY

In order to visualize how freight forwarders operate within the household goods industry, a brief synopsis of the industry is described below.

Household goods carriers include firms, both common and contract, engaged in the transportation of property commonly used in a home, an office, museum, institution, or hospital; and any articles requiring the specialized handling and special equipment used in moving household goods [Ref. 33: p. 340].

The household goods transportation industry consist of carriers, agents, and owner-operators [Ref. 33: p. 344]. Household goods movers usually are common carriers offering transportation services to the general public at published rates [Ref. 33: p. 344]. The first division is between interstate and intrastate movers. The second division of interstate carriers is into agency systems and independents. Even though there are fewer agencies than independents, the agencies are the dominant force in traffic and sales generation. Van lines were formed by groups of agents banding together to improve efficiency and increase income. [Ref. 33: p. 345]. Figure 15 on page 32 illustrates the various types of HHG carriers.

Agents provide many services including:

- Estimating the cost of a move.
- Selling packing containers to the shipper.
- Performing packing services prior to loading.

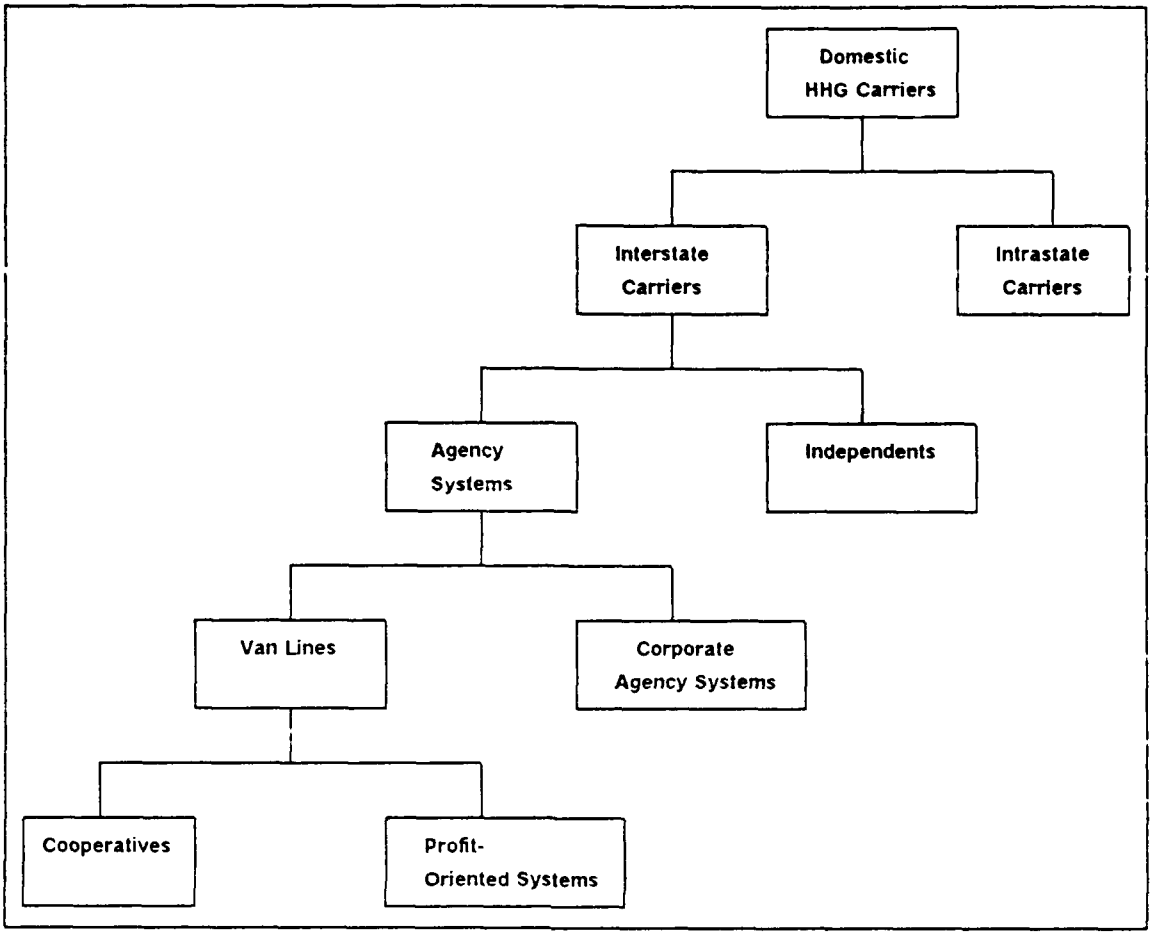

Figure 15. Types of HHG Carriers

Source: Stephenson, F.J., *Transportation USA*, Addison-Wesley Publishing Co., 1987, p. 344.

- Arranging for or making a local pickup.
- Arranging for laborers to assist the owner-operator with the loading of cargo.
- Providing storage-in-transit (SIT).
- Arranging local delivery of cargo.
- Unpacking the cargo.
- Connecting appliances.
- Assisting with the processing and settlement of claims for lost or damaged goods.

[Ref. 33: p. 346]

Independents Owner-operators are business people who lease their labor and their equipment to carriers or agents. Services normally provided by agents such as loading, unloading, packing, and unpacking are provided by the owner-operators [Ref. 33: p. 346].

According to the Logistics Management Institute, " ... as many as four separate business entities provide moving services and share in the movement revenues." [Ref. 37: p. 3-1]. They include the central franchise firms, local agencies, over-the-road vehicles and owner-operators [Ref. 37: p. 3-1]. However, the central franchise corporate logo may appear on the local agency and over-the-road vehicles.

The central franchise firms are used for central dispatch and proper traffic flow distribution. The local agencies are subdivided into two groups, terminal and storage warehouses. The customer will usually contact the terminal warehouse. This element also provides the packing, pickup vehicles, and manpower for the customer. The over-the-road vehicle is usually owned by the local agency who, in turn, owns the tractor-trailers with a corporate logo. The over-the-road vehicle group usually hires people to work the outbound and inbound moves which are normally dispatched and controlled by the central franchise firm. The last group, the owner-operators, will load, haul, and unload the household goods that are dispatched by the central franchise firm and coordinated by the local agencies. All four entities have a single corporate franchise name and dispatch system but operate semi-independently. [Ref. 2: p. 168]

By paying an entrance fee and abiding by certain guidelines, anyone can join a franchise and paint the logo on his/her truck. Before 1980, none of the four entities had control over the other. However, according to the *Household Goods Transportation Act of 1980*, §10934, the corporate franchise is responsible for any actions by the local agent or vehicle operators. [Ref. 38: p. 536]

C. PROBLEMS WITH FREIGHT FORWARDERS

1. General Trends Since 1980

After partial deregulation, easier entry into the household goods industry has resulted in an increase in the number of household goods carriers. The 1980 Motor Carrier Transportation Act was supposed to reduce the number of regulations and increase competition. After passage of this legislation, many new firms appeared from the ranks of small independents. Quality did not improve and the new firms relied on Government inspections to point out their problems. [Ref. 39: p. viii]

Household goods transportation is the leading source of complaints registered with the Interstate Commerce Commission (ICC), but the carriers continue to achieve very high service performance records [Ref. 33: p. 343]. According to 1985 ICC records, movers are on time 98 percent of the time for pickups and 96 percent of the time for deliveries. The ICC records also state that only four percent of all interstate moves in 1985 resulted in damage claims of more than $100. [Ref. 40: p. 566]

The Consumers Union conducted a survey of 20,000 people in 1985 who had recently moved. The results indicated that the moving vans arrived late 8 percent of the time on pickups and 15 percent of the time on deliveries. The survey also indicated that there was a 50-50 chance of damage to one or more items with the median damage amount of $200 [Ref. 40: p. 566]. Of the people surveyed with damage, only 62 percent filed a written claim [Ref. 40: p. 568]. The survey did not determine if the moves involved private parties or DOD, or both.

The General Accounting Office conducted a review for the House of Representatives Committee on Armed Services during the same period as the Consumers Union survey. The report was titled *Household Goods, Implications of Increasing Moving Companies' Liability for DOD Shipments.* The GAO evaluated MTMC's carrier performance data for 54 selected carriers. These carriers represented approximately 56 percent of DOD's domestic household goods shipments during the 1985 fiscal year. [Ref. 41: p. 9]. A few key points are listed below:

- The percentage of shipments incurring claims ranged from slightly over one percent for the best performing carrier to approximately 25 percent for the worst.
- The average for claims over all carriers was slightly over 16 percent.
- The average claim paid by DOD to the military service member varied from $297 for the best performing carrier to $823 for the worst.
- The overall average claim paid was $600. [Ref. 41: p. 9]

Hence, there appears to be a large discrepancy in both numbers and values of claims which are filed officially with the ICC versus the true damages as reflected in the Consumers Union and GAO surveys. These differences could be due to many factors, but one factor, as noted above, is that feedback from the shipper to both the Government and the carrier is not adequate. Additionally, it is not clear that shippers are aware of the ICC claims reporting process.

2. DOD Problems and Actions

Before the Deregulation Acts of 1980, freight forwarders usually shipped only in crates (code 2). Van lines had normally been providing shipment via code 1, loose

blanket wrapped HHG's transported in moving vans. Currently code 1 accounts for 98 percent of all DOD Conus to Conus household good movements. Approximately 45 percent of this traffic is arranged by freight forwarders. [Ref. 42: p. 3] The marriage of van lines and forwarders contribute to an inequitable distribution of available DOD traffic, because carriers with controlled forwarders have the advantage of more business or "more turns at the wheel." [Ref. 42: p. 1] This means that carriers are awarded similar amounts of traffic in the same rate period, or cycle, so that the carriers will all have equal amounts of traffic at the end of the rate period. MTMC believes that a large amount of revenue is being earned by motor carriers who control freight forwarders [Ref. 42: p. 1].

Based on the percentage of domestic HHG movements arranged by freight forwarders and the belief that some freight forwarders were subverting MTMC's equitable distribution policy, MTMC's Directorate of Personal Property distributed a letter to all Department of Defense Approved Domestic Household Goods Carriers in January of 1988. A major section describing the current freight forwarder situation is quoted below. (The entire letter is contained in Appendix A.)

> Freight forwarders now receive 45 percent of the DOD domestic HHG revenue, or approximately $200 million a year. Of this revenue, Code 2 shipments (those crated HHG shipments moved on general cargo flat bed trucks, the type of service traditionally provided by forwarders rather than van lines) constitute only about $14 million. That means the $186 million of the forwarder's revenue from DOD is from Code 1 shipments (shipments transported loose in moving vans, the type of service traditionally provided by van lines). We believe that much of this revenue is being earned at the expense of those motor carriers who do not control forwarders; i.e., that combinations of van lines and associated forwarders are sharing disproportionately in the traffic being allocated by personal property shipping offices.

Freight forwarders do not own vehicles. "They do not generate additional capacity, they get many 'turns at the wheel', and they do not provide any trucks." [Ref. 43] The Deputy Assistant Secretary for Policy and International Affairs for the U.S. Department of Transportation, made a similar statement concerning freight forwarders before a House Subcommittee hearing[10] on surface transportation,

> Forwarders have no economic characteristics warranting regulation for efficiency reasons, such as substantial fixed costs and scale economies. Fixed assets and shareholder's equity for even the largest freight forwarders averaged only slightly over one million dollars in 1978. [Ref. 44: p. 4]

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10 The Subcommittee Chairman was the Honorable Glenn M. Anderson of California.

Brigadier General Charles A. Vickery, MTMC Vice Commander, spoke at a Movers' and Warehousemen's Association meeting concerning the freight forwarders. Listed below are some of the major points of his address [Ref. 45]:

- "Groups of forwarders circumvent suspension and disqualification actions. With eight or nine carriers on a TDR (Traffic Distribution Record), the suspension of one doesn't hurt the parent company."
- "Forwarders offer no additional capability, they simply hire it from existing van lines."
- "Some groups play rate 'games.' One or two will be at a low rate level, while their 'brother' companies have much higher rates."
- "And most important to you [Mover's & Warehousemen's Association of America], it is absolutely unfair to smaller carriers without a 'stable' of forwarders. It [freight forwarders] simply destroys MTMC's equitable distribution policy."

D. MOVING INDUSTRY'S RESPONSE

Numerous letters between MTMC, Congressmen, and freight forwarders filled the postal system with point/counterpoint arguments during the first part of 1988. Basically, the Household Goods Forwarders Association of America, Inc., complained as a result of the MTMC January 1988 letter (Appendix A).

Two and half weeks after the January MTMC letter was sent, Donald H. Mensch, the Executive Director of the Household Goods Forwarders Association of America, Inc., **and a former head of MTMC's Personal Property Division from October 1976 to March 1979 and also a prior Commander of the Joint Personal Property Shipping Office at Cameron Station**[1] [Ref. 46] [emphasis added] responded with the letter shown in Appendix B. Mr. Mensch's letter requested Colonel Marotta to rescind the stated intention to eliminate freight forwarders until a study had been conducted. Mr. Mensch listed ten recommendations for study and made the following statement,

> Since MTMC's expressed intention is to eliminate an entire class of competitive carriers, viz., forwarders, this admittedly and immediately jeopardizes existing beneficial contractual relationships between forwarders and agents developed over the years in response to MTMC's requirements. [Ref. 47]

Colonel Marotta's response, Appendix C, informed Mr. Mensch that MTMC had no intentions of rescinding their proposals, and it was not MTMC's intentions to drastically affect agent-carrier relationships. [Ref. 48]

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1 The world's largest personal property shipping office.

On February 12, 1988, Alan F. Wohlstetter, the Executive Secretary of the Household Goods Forwarders Tariff Bureau and the General Counsel for the Household Goods Forwarders Association of America, Inc. sent a letter to Colonel Marotta in response to the MTMC January 22, 1988 letter. This letter complained of various items such as " .. seeing that household goods forwarders are not unfairly and unjustifiably eliminated from the domestic program." Mr. Wohlstetter's letter states that more studies need to be conducted and that there are many items that are unsupportable and warrant empirical study. At one point Mr. Wohlstetter states, "you [Colonel Marotta] infer that forwarders do not contribute to the economy and efficiency of moving DOD shipments. This assumption is also falacious [sic]." He also states, "A study would show that forwarders facilitate the movement of DOD shipments by enabling motor carriers to fill out their vehicles with profitable loads." In paragraph five, Mr. Wohlstetter states, "Lastly, your letter completely ignores any consideration of the competitive benefits which forwarders have brought to the domestic program." In the closing remarks, Mr. Wohlstetter states,

> To eliminate the competition of an entire segment of the industry, which by your own statement is presently accountable for 45 percent of DOD household goods business, is in direct conflict with the principles of this Administration, the Congress and the laws of the United States. [Ref. 49]

The letter in its entirety is located in Appendix D.

Two weeks later the Household Goods Forwarders Association of America sent out letters to all of its members on February 24, 1988. The letter stated that the Household Goods Forwarders Association of America had requested MTMC to rescind their intentions until a study had been conducted. The letter also included an " ... information paper containing additional information not provided by MTMC and a series of questions that come immediately to mind after reading MTMC's letter." [Ref. 50]. The letter is contained in Appendix E.

On March 14, 1988, the American Movers Conference (AMC)[12] sent a letter to Colonel Marotta supporting the proposal. The letter, Appendix F, is very articulate and comprehensive and addresses many questions. On the same date, the Household Goods Carriers' Bureau sent a letter also giving full support of the January 22, 1988 letter as long as the " ... important clarifications and questions outlined by AMC are satisfactorily addressed and answered." [Ref. 51].

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12 The president of the AMC is a retired USAF Major General.

On March 15, 1988, the Household Goods Forwarders Association of America and the Household Goods Tariff Bureau continued to complain and submitted a lengthy joint comments paper opposing MTMC's decision to eliminate the participation of all forwarders in the Department of Defense Domestic Personal Property Program. [Ref. 52]

On April 26, 1988, the Household Goods Forwarders Association mailed another letter, Appendix G, to Colonel Marotta still complaining. Mr. Mensch requested studies be accomplished and alternatives proposed. He requested that alternatives to elimination of the independent freight forwarder be provided before the May 19th Symposium, otherwise there will be a "Tower of Babel" situation. [Ref. 53]

On May 12, 1988, the Household Goods Forwarders Association mailed a request, Appendix H, to the Honorable Glen M. Anderson, Chairman of the House Public Works and Transportation Committee. Congressman Anderson's district is a major center for freight forwarders in California [Ref. 54]. This letter, which included a **pre-typed proposed H.R. amendment** [emphasis added], Appendix I, was a request for assistance and an additional paragraph thanking the Congressman for his help on their last request in August of 1986, the Defense Authorization bill, H.R. 4428.

The proposed H.R. amendment never made it through the legislative process. Congressional staffers spoke with Colonel Marotta and told him they would not let him eliminate the freight forwarders as per his 22 January 1988 letter. Therefore, Colonel Marotta drafted and distributed a suspension letter, Appendix J, to all Congressmen. [Ref. 55, 56, 57]

E. GAO AUDIT

As a result of the above actions the GAO was ordered by Congress to perform a major review of the domestic household goods moving program. The person, or persons, instigating the GAO study are apparently looking for a method to increase competition in the system [Ref. 55]. One reason for this may be the differences in international shippers, *intra*state, and *inter*state movers. International shippers and *intra*state movers who submit low bids will receive 50 percent of all available tonnage. This process contains a "me-too" cycle in which other carriers can match the low bid and share equally in the remaining tonnage [Ref. 37: p. 3-3]. *Inter*state movers submit bids and the lowest bid is the established base rate. However, the lowest bidder will not receive a designated percentage of tonnage. If additional carriers want to operate with this low bid base, they can bid as "me-too's". The original lowest bidder shares traffic

equally with any other carriers who meet the low bid in the "me-too" cycle. [Ref. 37: p. 3-3]. The higher bidders will receive business based on the base rate and not their original high bid. The only way the higher bidders, who did not accept the base rate, can receive business is if the ITO runs out of low rate carriers, then the ITO can contract with a higher rate carrier. This leads to a business incentive for international shippers who submit low bids, whereas it does not create an incentive in the interstate domestic market. This is one area the GAO report will look into. The GAO will also look for any other problems in the household goods moving program. The first draft of the GAO review on the domestic household goods moving program is due out around mid-June of 1989. [Ref. 55, 43]

Another GAO investigation, with a subsequent report titled *Are Forwarders' Rates For Moving Military Household Goods High Enough To Cover Costs,?* was conducted in 1979 [Ref. 58]. This report was requested by the House of Representatives Committee of Merchant Marine and Fisheries. The committee wanted the GAO to determine whether or not forwarders' rates were high enough to return costs and whether the program was fostering monopolistic practices by forwarders [Ref. 58: p. ii]. The GAO used three different approaches:

1. Estimated forwarder costs for underlying services on the basis of rates and charges published in contracts, agreements, tariffs, and other documents in public files and compared these costs with low bid rates.
2. Reviewed shipment records of two forwarders (not those who had bid the low rates), established their costs of providing the service, and compared such costs with rates charged DOD.
3. Examined the records of a forwarder which had recently gone into bankruptcy.

The GAO was unable to give an opinion as to the compensatory nature of the rates because, "Forwarders which had established or bid the lowest rates would not agree to let GAO review their records." [Ref. 58: p. ii]

With respect to monopolistic practices, the GAO believed that " ... the ease of entry into the forwarding industry and DOD's option to use an alternative method of moving household goods would prevent monopolies." [Ref. 58: p. iii]

F. LMI STUDY

Some household goods moving industry personnel seem to think MTMC's main reason for trying to eliminate the freight forwarders was to lighten MTMC's administrative workload and limit jobs to companies with equipment, thus eliminating the freight forwarders [Ref. 54]. According to Colonel Marotta, that statement is partially

true, "The freight forwarders are a major administrative burden, and the freight forwarders do not provide any capacity to the system." [Ref. 55]

In 1984, the Logistics Management Institute performed a study called *Personal Property Movement and Storage Program.* A key point states,

> The household goods industry is strongly represented by a handful of lobbying and trade associations. These associations are aggressive and politically astute at voicing industry concerns with the Personal Property Movement and Storage (PPMS) program.[13] The general business and economic environment has resulted in a climate in which the PPMS program undergoes close scrutiny by the household goods industry. The very nature of this climate tends to result in strained relations, particularly as MTMC introduces new management programs and strategies. [Ref. 37: p. 3-2]

G. SUMMARY

This chapter described the household goods industry and its various divisions with particular emphasis on freight forwarders. Problems associated with freight forwarders were discussed from two different aspects, the Military Traffic Management Command and the civilian moving industry. The problems have not been resolved, and therefore the GAO has been ordered to conduct a review of the domestic household goods moving program. The results of the GAO's findings are projected to be published in the summer of 1989. The next chapter will discuss the differences between code 1 and code 2 shipments.

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13 National Carloading, an independent forwarder, has a former Congressman as its president [Ref. 57].

IV. DOMESTIC MOTOR VAN VERSUS DOMESTIC CONTAINER

In 1972, Major General Clarence J. Lang, who took command of the Military Traffic Management And Terminal Service in April of 1969, stated,

> Over one billion dollars worth of cargo is stolen or pilfered each year from the nation's transportation industry, proving that the old cliche, *Crime doesn't pay*, reflects anything but reality within today's transportation industry. [Ref. 59: p. 8]

Now, 17 years later, what has been done? Has the household good industry reduced or aided the problem of stolen goods?

A. DEFINITIONS

There are two approved methods of moving household goods within CONUS: Domestic Motor Van and Domestic Container. Domestic Motor Van, code 1, is the movement of household goods in a motor van from an origin in CONUS to a destination in CONUS. Domestic Container, code 2, is the movement of household goods in containers from an origin in CONUS to a destination in CONUS.

In a code 1 shipment, upright wardrobes are used for clothing and textile blankets (pads) are used to wrap furniture. If temporary storage is required at the destination, the household goods are unloaded from the motor van, wrapped in paper pads, placed into wooden storage containers. All of this is done without the owner of the household goods viewing this action. The opportunity for pilferage is phenomenal and it is too hard to prove that goods were stolen at a specific location.

In a code 2 shipment, flat wardrobes are used for clothing and furniture is wrapped in paper pads. The household goods are loaded into wooden shipping containers and closed at the origin. The shipping containers are moved by flatbed service or rail. Containers are not opened until delivery. However, if left outside or shipped uncovered, this sometimes causes moisture damage to the household goods. [Ref. 60: pp. ix, xi] Both methods are approved by the Military Traffic Management Command (MTMC).

Household goods industry officials have been told by MTMC that code 2 *may* be comparable and favorable in cost to code 1 and *may* provide a significant tool in meeting the total domestic shipment requirements. [Ref. 61: p. 4] A MTMC official stated,

> If code 2 is less costly, it should be used and if equal, then we need to use it in such a way to optimize our capability at that cost level. This may be particularly important, for instance, when we know there is a high probability of a shipment going into

> Storage-In-Transit (SIT) and when we are aware of a potential shortage in motor capability. [Ref. 61: p. 4].

The official closed with "Conserve dollars and capacity. Don't underutilize code 2 or overutilize code 1 to our detriment." [Ref. 61: p. 4].

B. DOMESTIC HHG CONTAINERS

In order to increase profits, van lines are continually developing new and innovative ideas. One idea is the containerization of household goods, better known as code 2. The idea of domestic door-to-door containerization for household goods is not a new idea. In 1906, the Bowling Green Storage and Van Company of New York developed a "lift-van" container for ocean movement of household goods [Ref. 36: p. 105]. Listed below are five major van lines and a brief description of their attempts at containerization.

1. Imperial "Container-Pak"

Imperial Van Lines International began containerized door-to-door forwarding of household goods overseas back in 1958. In the United States, Imperial initiated the "Container-Pak." [Ref. 62: p. 71]. Container-Pak was just another name for door-to-door service and only lasted 1-2 years. Imperial went bankrupt around 1986. [Ref. 63]

2. Smyth "Super Seal"

In the mid-60's, Smyth Worldwide Movers introduced the "Super Seal" polyethylene container [Ref. 64: p. 24]. It could not take the abuse of handling and thus plywood containers continued to be the number one preference. Smyth however did not give up. They developed a new door-to-door container which was a 310 cubic foot plywood box with steel frames. The plywood panels were covered with weatherproof epoxy. In 1976, Smyth Van Lines started door-to-door containerized household goods freightforwarding service between major East and West Coast metropolitan areas [Ref. 62: p. 69]. The "Smyth Container Move" used weather-resistant containers made of a blend of steel and high-impact polyethylene. Each box would hold approximately 200 cubic feet of goods. Douglas Barnes, President and CEO of Smyth, described the container transportation process:

> ...the containers were placed on a flatbed truck, sealed and hauled to a central loading dock where they were weighed and transferred to a 40-foot flatbed or specially designed container van loaded with other containers headed in the same direction [Ref. 62: p. 72].

Smyth bought 500 polyethylene containers for approximately $1,000 each. One problem with these Super Seal containers was that they were hard to repair after being damaged.

Smyth Van Lines also bought Greyhound Van Lines around 1965 and the president of Smyth admitted that this was one of their worst mistakes. According to an unnamed source, these decisions helped Symth down the road to bankruptcy Golden Cycle, a gold mining company which owned Symth, went bankrupt around 1977. [Ref. 65]

3. Bekins "Safe-T-Vault"

The Bekins company took the idea one step further. A sealed version called "Safe-T-Vault" was designed by Marv Egeland. He stated that he "expected to virtually eliminate loss claims and provide for minimal handling of goods" [Ref. 62: p. 73]. New trailers could stow five "Safe-T-Vault" containers. Each container measured 5' x 7' x 7½ feet plus 350 cubic feet of overflow space in special compartments. The "Safe-T-Vault" started in 1977 and only lasted about two years. [Ref. 66, 30] Some of the problems with Safe-T-Vault were:

- Terminal service expense was too high.
- Origin and destination pickup and delivery expenses were too high.
- Customer response was not very good.
- There was not a market for containers at that time.
- The sales force did not market the container idea very well.
- Cross docking procedures[14] added to the terminal expense.
- Did not yield net bottom line profit.

Since there was no profit, it was dropped approximately two years later. [Ref. 30]

4. VanPac Lift Van

American VanPac Carriers started international door-to-door service in 1957 shipping out of Germany to the United States. American VanPac also pioneered the liftvan with code 2 domestic shipments in 1971. VanPac uses two different size containers, either seven or four foot high. They have metal skids, metal frames, single piece plywood floors, and a one piece plywood top with bonded metal caps. The doors slide up into an overlap of the one piece metal top. Easy locks (metal bands that seal the box, but are not lockable)[15] hold the door securely in place. The one piece metal top extends

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14 "Set off enroute" is another name for cross docking. For example, a load is going from San Francisco to New York City, but the load is shipped to Chicago. The load is offloaded in Chicago and then reloaded onto another truck for New York City. Additional expenses include labor to rehandle containers, and storage charges.

15 Currently there are easy locks that can be secured with a padlock.

down the sides. Both containers use exterior grade plywood. All joints are caulked during assembly and the door closures are lined with vinyl gasket material.

There are four basic steps to a VanPac move. First, the VanPac contractor packs and loads the shipment into either seven foot or four foot high containers at origin. Second, the containers are secured with the owner's lock or sealed by VanPac in the owner's presence at origin and loaded into a fully enclosed VanPac land cruiser. Third, when the shipment arrives at the VanPac destination contractor's warehouse for storage or delivery, the household goods are handled by forklift. When the household goods shipment is in storage, the containers are still secure and still locked. There are no loose or exposed goods. Fourth, the VanPac container arrives at the new destination and is unlocked by the owner for unpacking. [Ref. 67] Listed below are some of the benefits to the shipper on containerized domestic household goods as quoted by American VanPac Carriers:

- Only two handlings of household goods; into the containers at origin and removal from containers at new destination residence.
- No co-mingling of personal and household effects with other shippers. Each shipment is self-contained in individual containers.
- Containers are sealed at the origin residence in the owner's presence. The owner can either affix a padlock or the VanPac contractor will supply seals for the container door.
- Less preliminary packing. For example, dresser drawers, when not overloaded, can be moved as is, saving the inconvenience of unpacking cartons at destination.
- Van type cloth pads protect furniture items while inside the domestic container.
- Requested pick-up dates are assured. No delays are incurred in waiting on the interstate van to arrive.
- Fewer, if any, claims due to less handling and exposure.
- If access to the shipment is desired while household goods are still in storage, items can be placed in the front of one container at the time of pick up and that container pre-marked for easy identification.
- Faster transit time, as the driver operates terminal-to-terminal.
- Containerized goods move in a closed trailer affording the best protection from origin to destination.
- If storage in transit is desired, containers are moved swiftly from the land cruiser, placed into storage in transit in the shipping containers.
- No exposed, loose household goods on warehouse floor awaiting placement into SIT containers. [Ref. 67]

Originally, code 1 was computed as segmented rates[16] and code 2 was computed as single factor rates[17] , and therefore it was difficult to compare the two. American VanPac Carriers tried to show MTMC how to compare code 1 and code 2 rates by dividing up segmented rates and single factor rates. [Ref. 68] Table 1, Table 2, and Table 3 on page 46 show the VanPac cost comparisons [Ref. 67: pp. 9-10]. 'Loose' refers to code 1 and 'D-to-D', or Door-to-Door, refers to code 2. The tables are from 1978 and obviously are not valid today.

The tables indicate that there were some differences between the two rates. For example, in Table 3, a code 1 shipment weighing 12,000 pounds, traveling 2600 miles would cost $4565.20. If the same shipment was sent code 2, the cost would be $4260. The savings in using code 2 would have been $305.20.

All rates are currently segmented today with no single factor rates. Ten years ago, it was cheaper to use code 2 than code 1. Even today, it sometimes costs the same to ship either code 2 or code 1.

The following rates are quoted from a Carrier Accepted Rates Report (CARTS) Motor Transport (MT), with an effective date of 5/01/88. [Ref. 69] (The Standard Carrier Alpha Code[18] used is AAVP.) When shipping from Robins AFB, GA to either Arizona, California, Idaho, Nevada, Oregon, Utah, Washington or Wyoming, the segment rates are all the same for code 1 *or* code 2. When shipping from Fort George Meade, MD to Idaho, Nebraska, Nevada, Oregon, Utah, or Wyoming, the segment rates again are the same for either code 1 *or* code 2.

Les Allen of Vanpack thinks there is "historical astigmatism" when dealing with code 1 and code 2, that Transportation Officers (TO's) still think code 1 is always cheaper [Ref. 68]. Basically, it still comes down to the TO having the responsibility of deciding which method to use when shipping certain cargoes.

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16 Segmented rates are composite rates derived from the addition of several separate charges for services required to complete a domestic move. The segmented cost elements may include charges for line-haul transportation, packing and unpacking, additional transportation, a fixed shipment cost, appliance servicing, and other accessorial services normally associated with a domestic move.

17 A single rate that combines charges for all services, except some accessorial services, associated with the movement of a shipment.

18 A four-digit alpha code assigned to each carrier by the National Motor Freight Traffic Association to identify that carrier in the various procedures and documents used in the DOD Personal Property Shipment and Storage Program. (i.e., AAVP represents American VanPac Carriers, Inc.)

Table 1. 1551-1600 MILES: Packing @ $7.50/cwt loose and unpacking @ $1.50 cwt loose.

	3000		6000		9000		12000	
Weight	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D
Rate	25.39	36.02	22.04	31.32	19.88	28.54	18.64	27.87
Packing	225.00		450.00		675.00		900.00	
Add. Trans.	30.00		60.00		90.00		120.00	
Appl. Svc.	10.00		10.00		10.00		10.00	
Unpacking	52.50		105.00		157.50		210.00	
Linehaul	761.70	1080.60	1332.40	1879.20	1789.20	2568.60	2236.80	3344.40
Total Cost	1079.20	1080.60	1957.40	1879.20	2721.70	2568.60	3476.80	3344.40

Table 2. 1951-2000 MILES: Packing @ $7.50/cwt loose and unpacking @ $1.50 cwt loose.

	3000		6000		9000		12000	
Weight	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D
Rate	28.53	39.31	25.75	35.11	24.15	32.42	22.51	31.51
Packing	225.00		450.00		675.00		900.00	
Add. Trans.	30.00		60.00		90.00		120.00	
Appl. Svc.	10.00		10.00		10.00		10.00	
Unpacking	52.50		105.00		157.50		210.00	
Linehaul	855.90	1179.30	1545.00	2106.60	2173.50	2917.80	2701.20	3781.20
Total Cost	1173.40	1179.30	2170.00	2106.60	3106.00	2917.80	3941.20	3781.20

Table 3. 2551-2600 MILES: Packing @ $7.50/cwt loose and unpacking @ $1.50 cwt loose.

	3000		6000		9000		12000	
Weight	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D	Loose	D-to-D
Rate	32.39	43.20	29.51	38.99	28.69	36.41	27.71	35.50
Packing	225.00		450.00		675.00		900.00	
Add. Trans.	30.00		60.00		90.00		120.00	
Appl. Svc.	10.00		10.00		10.00		10.00	
Unpacking	52.50		105.00		157.50		210.00	
Linehaul	971.70	1296.00	1770.60	2339.40	2582.10	3276.90	3325.20	4260.00
Total Cost	1289.20	1296.00	2395.60	2339.40	3514.60	3276.90	4565.20	4260.00

5. TransVault

Allied Van Lines tried the containerized concept eight years ago. Then Vice-President Les Goldner designed a wooden container with steel frames and lockable doors. This container was called TransVault. Mr. Goldner wanted the TransVault to be different from the other carrier's containers so his design was not a standard container size. The light weight of TransVault allowed for easy handling with a forklift. Originally it was meant to be dropped off at residence and the owner of the household goods could save some money by packing the container instead of the a moving company doing the

packing. Later, the TransVault would be retrieved and trucked to its destination. [Ref. 70]

MTMC liked the idea of the TransVault and conducted a one month test with Allied. Hauling from the West Coast to the East Coast created no problems. Hauling from the East to West Coast created a lot of empty backhauls. This was due to the fact that more people were moving to the West Coast rather than the East Coast during the one month test. Other problems included Allied having to file for a rate reduction from the code 1 rate since the TransVaults could not be placed in storage. This means if the contents stayed in storage within the TransVaults, there would not be enough TransVault containers to perform the test. MTMC approved this code 2 shipment as a code 1 shipment. In this way, the contents of the containers, while in storage, could be removed and the TransVault reused for shipping more household goods. Normally the contents of a code 2 container cannot be removed until delivered to the destination. [Ref. 71]

One advantage to TransVault, and in particular to code 2, was that Allied could charge by container and not by weight. This would prevent drivers from adding illegal additional cargo weight to their trailers in order to bill customers for the heavier weight. Prior to the *Household Goods Transportation Act*[19] *of 1980* this form of weight bumping was a problem. By charging for the number of containers only, half empty containers were no problem for the less than truckload market. A visual survey of the household goods would be conducted and, based on the estimated cubic footage, a specific number of TransVaults would be ordered. Allied would then charge by the number of TransVault containers used instead of by weight. As an experiment, the Interstate Commerce Commission (ICC) granted special permission for Allied to develop a tariff for TransVault for the one month test. Allied was now able to get the ICC to approve charging the public by container rather than by weight.

There were many things wrong with this one month test.

- The container was not standardized (not compatible with intermodal transportation).
- No long term evaluation of cost effectiveness was performed.
- No loss or damage reports were submitted.

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19 The HHG Transportation Act attempted to: (1) allow carriers greater flexibility in developing price service options; (2) eliminate unnecessary ICC regulations and the related paperwork burdens on HHG carriers; and (3) improve the industry's service performance. [Ref. 34: p. 307]

- Special hauling equipment was required.
- Special tie downs were required.

The idea of a standard 10-, 20-, or 30-foot container for hauling household goods does not excite moving industry personnel. The economies of scale are such that the cost per mile is the same for operating a tractor trailer, whether it is carrying a 20- or 48-foot trailer. The trend now is to operate larger and larger equipment.

Mr. Mario Rizzo, Allied's Director of Military and Government Affairs, states that the 20-foot container would be too heavy for hauling household goods and that most common carriers, such as Arkansas Best and Consolidated Freightways, charge by net weight. For example, Allied Van Lines bills the Government for the contents of a container which weighs 1,000 pounds. The common carrier charges Allied for the contents *and* the container weight. A standard Type II plywood container weighs anywhere from 360-400 pounds. Therefore the common carrier charges Allied based on 1,400 pounds where Allied is billing the Government for the 1,000 pound contents only. Therefore the containers need to be lightweight in order for Allied to make any profit.

Allied did have a fleet of flatbeds but abandoned them due to the low profits. Allied will usually contract with longhaul companies like Overnight and Thurston who charge for the contents of the container. Since common carrier rates have risen, it is very difficult to be competitive with loose household goods. [Ref. 70]

According to Mario Rizzo, TransVault did not work because it:

- Was oversized (Goldner's design was larger than the moving industry standard container size)
- Was too expensive ($1,200 for TransVault compared to $90 for a wooden Type II plywood box)
- Required a special Allied dropframe trailer for hauling
- Required special metal lockdown devices
- Could not chain the TransVault boxes down on a flatbed truck

[Ref. 70]

C. CONTAINERS: BACKGROUND AND PROBLEMS

According to Stu Kissinger, senior engineer for Intermodal Systems at MTMC,

"Intermodal containers are the wave of the future" [Ref. 72: p. 3]. The MILVAN[20] and CONEX[21] boxes were good starts for the military, but now DOD has to look at a more standardized container. Supposedly, the 8 x 8 x 20-foot dry cargo container, known as the TEU (twenty-foot-equivalent-unit), replaced the military CONEX box [Ref. 74: p. 17]. By using the standard 10-, 20- or 40-foot container for shipping household goods, this form of transportation can either be truck, rail, air or ship; anywhere, anytime. Mr. Kissinger mentions that several DOD steering groups at various levels are seeking better ways to utilize containers. Household goods shipments are but one of the many ways this concept can be utilized.

Forecasters have predicted an expansion of containerized traffic of 5.6 to 6 million 20-foot equivalents (TEU's) by the year 1990. This prediction is based on:

- Maintaining the present ratio of containers to ship slots.
- World trade growth.
- Maintaining the current average of 34-39 tons per TEU.

Figure 16 on page 50 plots the annual growth in the number of (TEU) containers, and Figure 17 on page 51 plots annual growth in trade tons.

1. Description

The 20- and 40-foot container sizes were decided upon by the International Organization for Standardization (ISO) through an agreement made at a meeting of all steamship companies at the International Standardization Meeting at Geneva, Switzerland [Ref. 75: p. 19]. According to *JANE's Freight Containers, 1986* [Ref. 76: p. 658], the work of international standardization in the field of freight containers is carried out by Technical Committee (TC) 104 of the International Organization for Standardization (ISO). There are 165 technical committees which serve 2,000 specialized sub-committees and working groups in such fields as shipbuilding, road vehicles, aircraft, machine tools, etc. [Ref. 76: p. 658].

ISO 668-1979 defines Series 1 freight containers as:

- of a permanent character and accordingly strong enough to be suitable for repeated use;

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20 The Military-owned Demountable Container (MILVAN) measures 8x8x20-ft. They were purchased to expand the military's existing intermodal container capability. [Ref. 73: p. 23].

21 The Container Express (CONEX) is a 6x6x6-ft metal container designed for military shipments. It was developed after WWII by the Military Sea Transport Service (MSTS).

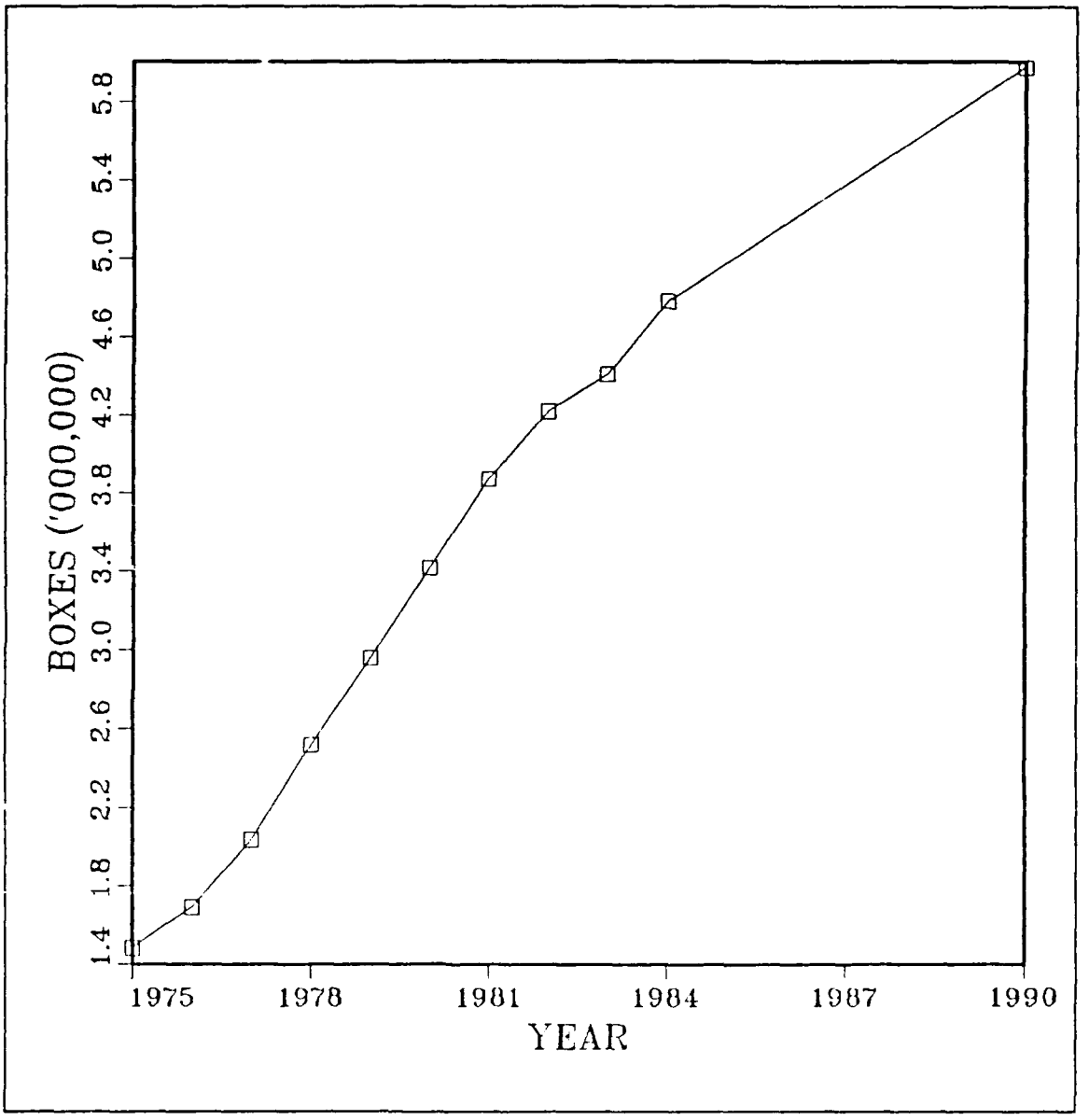

Figure 16. World Container Fleet, 1975-1984.

Source: CSR Consultants, Ltd.

- specially designed to facilitate the carriage of goods, by one or more modes of transport, without intermediate reloading;
- fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another;
- so designed as to be easy to fill and empty;
- having an internal volume of 1 m^3 or more.

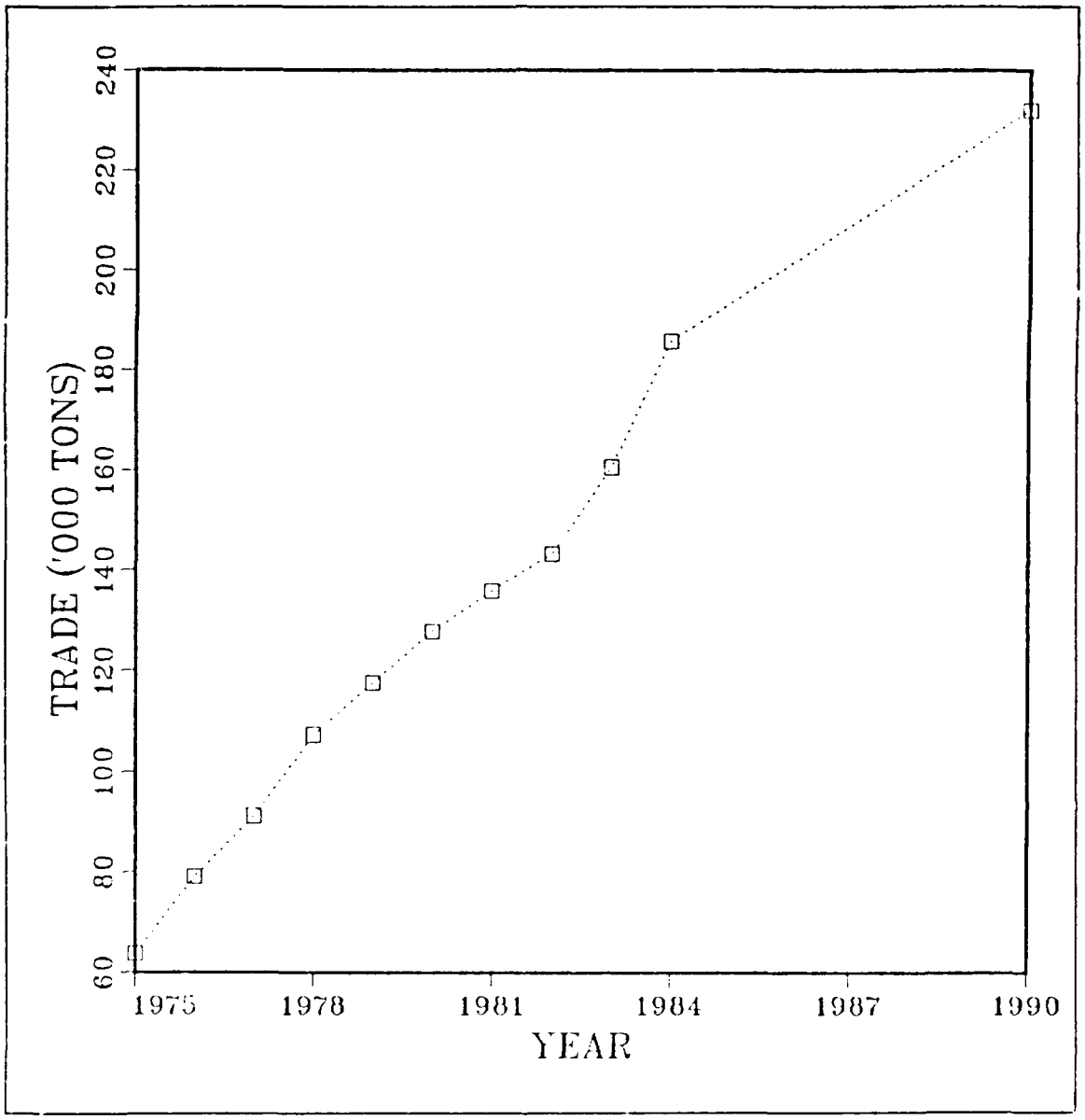

Figure 17. World Container Fleet, 1975-1984.

Source: CSR Consultants, Ltd.

The term *freight container* includes neither vehicles nor conventional packing. ISO 668-1979 also lists classification, designation, and size codes:

Classification and Designation.

All units have a unifying nominal width of 8ft (2,438mm).

Single letter indicates a nominal height of 8ft (2,438mm).

Double letters indicates a height of 8.5ft (2,591mm).

Single letter with **X** indicates the height of the container is between 0 and 8ft (2,438mm).

A indicates a nominal length of 40ft (12m).

B indicates a nominal length of 30ft (9m).

C indicates a nominal length of 20ft (6m).

D indicates a nominal length of 10ft (3m).

Reduced heights are permissible (within the **X** designation) for tank, open-top, platform and platform based-type containers.

Container size codes. Size codes are described in ISO 6346. The size codes consists of two arabic numerals. For containers having a nominal length equal to or greater than 3,000mm (10ft), the first numeral denotes length and the second numeral denotes height and the presence or absence of a goose-neck tunnel. Size codes for Series 1 containers are illustrated in Table 4. For example, a 40′ x 8′ x 8.5′ container would be marked with a freight rating designation of **1AA**, whereas a 30′ x 8′ x 8′ container would be marked with **1B**.

Table 4. CONTAINER SIZE DESIGNATIONS: All units have nominal width of 8′.

Length		Height		
m	ft	2,438mm (8ft)	2,591mm (8.5ft)	Less than 2,438mm (8ft)
12	40	1 A	1 AA	1 AX
9	30	1 B	1 BB	1 BX
6	20	1 C	1 CC	1 CX
3	10	1 D	----	1 DX

2. Companies

There are many companies who supply various type of containers. The 20-foot and 40-foot containers are the most prevalent. Two foreign companies manufacture a 10-foot container. *SICOM* of Italy produces 10-, 20-, 30- and 40 foot steel dry cargo containers. *TIPP & KRAN* of Sweden also manufacture steel dry cargo units in 10-, 20-, 30- and 40-foot lengths. [Ref. 76: p. 528, 533]

Conventional containers have been primarily manufactured overseas in the United Kingdom, France, West Germany, Korea, Japan, and South Africa. The Korean, Japanese, and South African containers have now become too expensive to purchase due to the devaluation of the dollar. [Ref. 77: p. 24] Many container entrepreneurs are developing U.S. made containers. Fruehauf has plans to increase its reefer production from 400 to 1,400 in 1989 and add 2,500 dry vans with emphasis on the 40- and 48-foot units. Steve Jones, Vice President, marketing, for Custom Containers stated,

> The industry has broken wide open in the last month, and the newest and best playing field for container manufacturing today is in the United States. We have already been approached by large buyers of containers from this country and from abroad. ... The container-building market in this country has been very complacent, but it won't be for much longer ... everything here is new and the opportunities are tremendous [Ref. 77: p. 25].

According to most U.S. manufacturers, the standard 20-foot container must sell for between $20,000 and $30,000 to successfully compete with the foreign market. The main concern of U.S. container manufactures are labor costs and if a 30 year absence from container manufacturing has created a technological void of cost effective production techniques. [Ref. 77: p. 25]

a. Handling Equipment

Two *Caterpillar* lift trucks suitable for loading the 20- or 40-foot container are the V800 with a 37,000 kg lift capacity and the V925 with a 42,000 kg lift capacity. Both have a lift height of 9,740mm (3 high stacking). Both are equipped with adjustable top handling attachments for handling either the 20 foot or 40-foot loaded containers. [Ref. 76: p. 563]

The *Fruehauf* company manufactures container chassis for ISO containers. The Model NBLZ chassis straight frame is designed to handle 20-foot containers. The Model NBJZ chassis is a straight frame which is able to handle 40-foot containers with a gross weight of 67,200 pounds. It can also handle two 20-foot containers having a gross weight of 44,800 pounds each. [Ref. 76: p. 563]

J.I. Case Company manufactures straddle carriers and mobile gantries. The 770TC Travel Carrier has a maximum lift capacity of 30,481kg. The 1000B Travelift can lift up to 54,400kg. [Ref. 76: p. 562]

3. Standardization

Dan Kerrigan, president of the Containerization & Intermodal Institute in New York stated,

> Rather than more standardization, I think the industry is seeing more specialized equipment in use. Shippers and carriers are too busy trying to meet the growing need for containers to really worry about standardization. Instead, they're trying to find specialized equipment for the special market niches which are developing. I see what's happening today as more of a logistics challenge than a standardization challenge. [Ref. 78: p. 29].

As far as the 20-footers being replaced, Nick Cinquepalmi, president of Landmark Transportation, a major transportation broker, expanded Mr. Kerrigan's remarks with,

> The industry has approximately 40,000 containers out there and virtually every one of them whether it's a 20-footer or a 40-footer, is in use. I don't see a major move toward industry standardization. Far from it. Indeed, there is probably more need now for lighter weight, higher cube containers than industry equipment standardization. ... The industry is very diverse. Not all shippers can fill a 45, a 48, or a 53. [foot long container] The average container load is somewhere around 44,000 pounds, and many loads are less than 20,000 pounds. Are there benefits to using 20-footers? Absolutely! There is a benefit to using virtually every size of container. [Ref. 78: p. 29]

4. Inventory

At the end of 1985, there were approximately 899,580 20-foot containers in the American inventory. This breaks down to 59.5% of the total percentage of the container fleet by type. At the end of 1985 there were approximately 1,511,738 total containers with a TEU of 2,106,172. [Ref. 79: p. 46, 47]

By the end of 1986, there were approximately 863,854 20-foot containers (60.48% of the total percentage) and approximately 1,428,236 total containers with a TEU of 1,979,452. From 1985 to 1986 the total number of containers in the American inventory had dropped by 83,502. This decreasing trend continued because industry perceived an oversupply of containers. During 1988 the trend has reversed and container numbers are on the rise. [Ref. 80]

Currently there are 43,310 total ISO serial numbers issued to all DOD services for various types of containers. Of this total, 29,930 are 20 feet long and used in a myriad of different applications, to include refrigeration, dry cargo, general cargo, expandable sides, restraint, flatrack, rigid GP (general purpose), EMI (electromagnetic interference) shelter, knockdown shelter and bulk standard. [Ref. 81]

5. Uses

Nolan Gimpel, president of American President Intermodal Co., mentions a very important fact:

> Most shippers today are looking for speedy damage-free delivery of freight. They want their distribution guaranteed, and they really don't care how--or in what type of equipment--their product is shipped. They simply want consistent, cost-competitive service. [Ref. 78: p. 28]

As stated earlier in Section D, several DOD steering groups at various levels are seeking better ways to utilize containers. The Staggers Act and the deregulation of the trucking industry has almost eliminated the usefulness of the 20-foot container for commercial use. The uneconomical aspects of using the 20-foot vice 40-foot container is due to shippers actually paying more per ton for cargo moved in a 20-foot container than a 40-foot container [Ref. 73: p. 42-3]. Many rates are based on actual tonnage and the linehaul costs are approximately the same, thus the cost per cargo ton is higher for a 20-foot container. Due to the cargo handling cost of moving a 20-foot container, the cost of handling a 40-foot container is almost double [Ref. 73: p. 43].

D. PROBLEM AREAS IN HOUSEHOLD GOODS SHIPMENTS

1. Drivers

Transportation analysts have predicted a driver shortage by the year 1990 [Ref. 42: p. 11]. This assumption is based on many factors, some of which include increased federal regulations covering truck driver licensing, drug testing of drivers, worsened working conditions, and declining pay. According to the American Trucking Association, since 1979, truck drivers' wages have risen just over 20 percent while wages for all other occupations have risen almost 50 percent [Ref. 82: p. 4]. For a comparison, see Figure 18 on page 56.

Some of the requirements for becoming a moving van operator are greater than those for a driver hauling general goods. It often takes longer to be trained as a moving van driver than a general goods driver. When handling household goods, skills such as loading, wrapping, stacking, unloading, etc. are needed. A recent graduate from a truck driving school will not have these qualifications and may therefore cause more damage to a household goods shipment than a trained moving van operator would. A line-haul driver can haul a container, but has trouble packing, loading, stacking, etc. [Ref. 42: p. 12]. According to Frank Galluzzo, MTMC Traffic Management Specialist, origin and

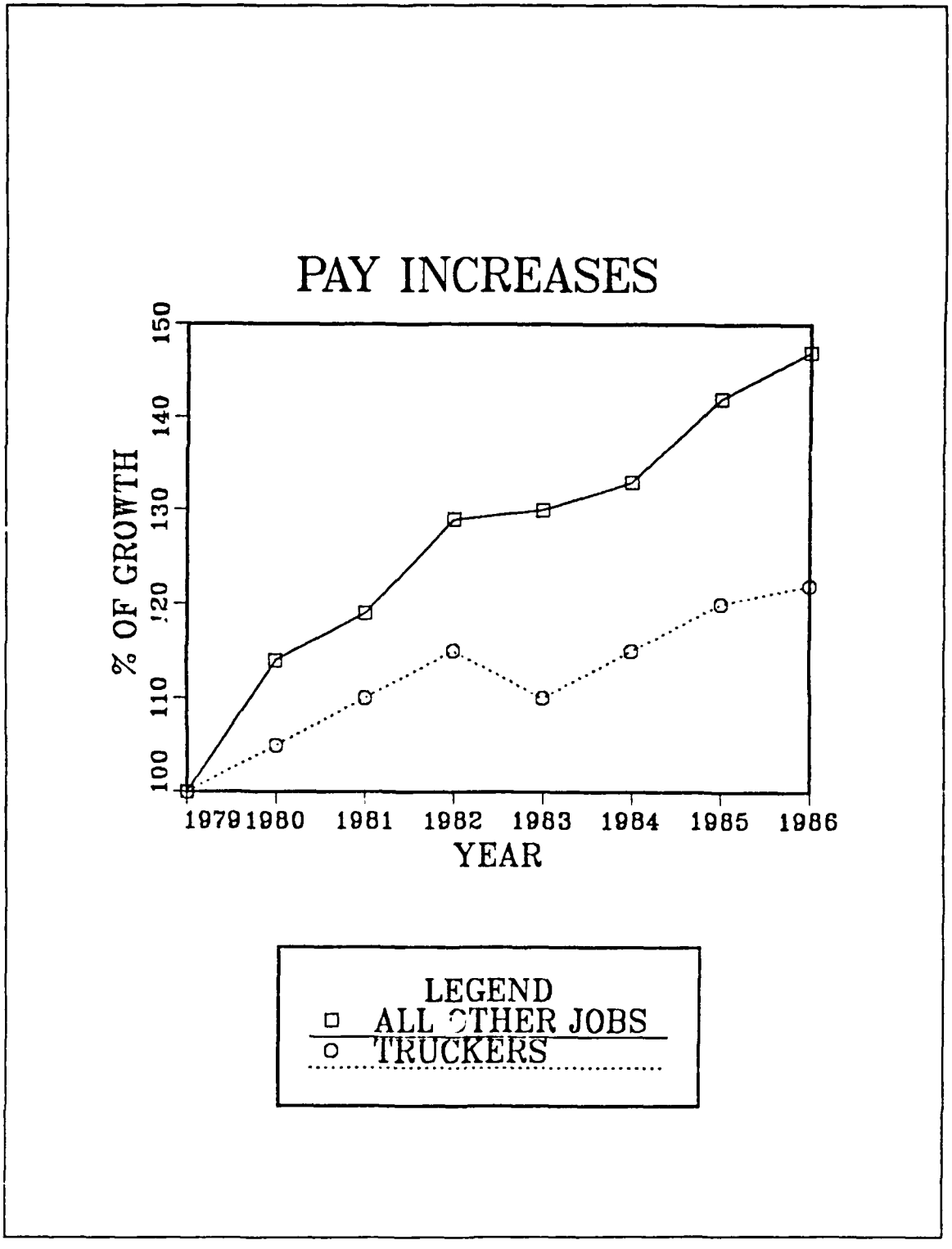

Figure 18. Pay increase - All Jobs vs. Truckers. (1979 = 100%)

destination agents are needed to load and unload shipments when the line-haul movement is made using drivers, not van operators [Ref. 83].

Lost revenues can be traced to drivers and van operators. In an attempt to cut down on lost revenues some of the major van lines now have safety divisions. According to Robert Baer, President of United Van Lines,

> Safety deficiencies in trucking can mean many things: costly claims for damage or loss of goods while in transit; higher premiums; vehicular accidents and other traffic violations; warehouse injuries; fires; breaches of security ... the list is endless [Ref. 84: p. 45].

Kurt Hoffman thinks one of the reasons damage claims have been so low in the special products divisions[22] is that only exceptional drivers are allowed to perform the transportation [Ref. 85: p. 108].

In order to pay a competitive wage to drivers, some carriers are reducing their discount to shippers. Allied Van Lines decreased their discount from 35 percent to 30 percent. The philosophy is the cost savings will be used to recruit and retain owner-operators by improving their compensation [Ref. 82: p. 5].

North American Van Lines views the driver as a problem. As stated above, this is due to the cost involved in recruitment, training, and retraining. [Ref. 63] During the 1989 North American Van Lines Conference in Phoenix Arizona, Mr. Ken Maxfield, President of North American, stated that North American Van Lines plans to make 75 percent of their domestic moves in boxes (code 2) via piggyback rail[23] within ten years. [Ref. 63]

2. Packing

The *1988 Transportation Fact Book* provides many facts and figures on household goods shipments, including packing revenue. Packing accounts for a higher percentage of total revenue in Government moves than in non-Government moves. Therefore, closer attention must be directed at packing. A two year comparative anal-

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22 Most of the major household goods carriers have a special products division. These divisions handle electronic products, high-value, sensitive shipments such as museum exhibits, art collections, medical equipment, spacecraft and micro filmers [Ref. 85: p. 107].

23 The Norfolk Southern Corporation bought North American Van Lines two years ago from PepsiCo.

ysis of household goods carrier revenue by accessorial service[24] is printed in section three of the *1988 Transportation Fact Book*. Section three used six different traffic groups:

1. Personnel effects - National Accounts - Non-binding estimates
2. Personnel effects - C.O.D. - Non-binding estimates
3. Personnel effects - National & C.O.D. - Binding estimates
4. Personnel effects - Contract traffic
5. Personnel effects - Government traffic
6. All 3rd Proviso traffic

Included in the accessorial analysis is a line item for packing. Table 5 displays extracted data from the six traffic groups listing total revenue, packing revenue, and packing percentages of the corresponding traffic groups for 1986 [Ref. 86: pp. 29-35]. Table 5 indicates that the largest percentage of packing per traffic group occurs in Government traffic. This can either be due to the Government paying too much for packing services or to military specifications for packing which are more rigorous than those of to the other traffic groups.

Table 5. 1986 ACCESSORIAL SERVICE REVENUE

Traffic Groups	Total Revenue ($)	Packing Revenue ($)	Packing (%)
Personnel effects - National Accounts - Non-binding Estimates	231,174,290	22,117,940	9.57
Personnel effects - C.O.D. - Non-binding Estimates	284,467,085	14,176,855	4.98
Personnel effects - National & C.O.D - Binding estimates	503,666,660	30,204,560	6.00
Personnel effects - Contract traffic	679,792,720	75,052,250	11.04
Personnel effects - Government traffic	**209,677,300**	**32,154,350**	**15.34**
All 3rd Proviso traffic	468,850,170	140,490	0.03

The Traffic Group terms are described below:

- Binding Estimates - Those shipments whose charges are estimated pursuant to a binding estimate tariff provision and bound at a specified charge.
- C.O.D. - Those shipments whose movement is usually paid for by the owner of the goods and at the time of delivery.
- Contract Traffic - Those shipments whose charges were predicted upon a contractual agreement between the carrier and a national account shipper.

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24 Includes such items as storage-in-transit (SIT), warehouse handling, extra pick-up, waiting time, elevator and stair carry, appliance service, packing, etc.

- Military Government Traffic - Those shipments moved for the account of the department of defense as well as all civilian agencies.
- National Accounts - Those shipments whose movement is authorized and paid for by a business entity.
- Non-Binding Estimates - Those shipments directly rated pursuant to the applicable tariff.
- Personal Effects - Term used to identify first proviso shipments of household goods.
- 1st Proviso Traffic - Those shipments that include personal effects and property used, or to be used, in a dwelling.
- 2nd Proviso Traffic - Those shipments that include furniture, fixtures, equipment and property of stores, offices, museums, institutions, hospitals, or other establishments.
- 3rd Proviso Traffic - Those shipments that include objects of art, displays, and exhibits which require special handling usually provided by moving companies. [Ref. 86: p. 117]

There are differences in code 1 and code 2 packing. In a code 1 move, clothing is hung on hangers in vertically oriented wardrobe boxes. In a code 2 move, this same clothing is laid flat, without hangers, in long boxes. The furniture packing for code 1 and code 2 is also different. In a code 1 move, furniture is wrapped with blankets and packed loose into a moving van. In a code 2 move, furniture is wrapped with paper pads and packed into wooden crates.

Due to the amount of rehandling done during a move, the packing process needs to be performed properly. One example includes a move from CONUS to Alaska or Alaska to CONUS. One of the major differences between code 1 and code 2 when moving from CONUS to Alaska and from Alaska to Conus is the amount of rehandling of household goods. A code 1 permanent change of station (PCS) move from San Diego, California to Fairbanks, Alaska involves handling and rehandling household goods anywhere between five to eight times. For example, household goods 'A' are loaded into moving vans with blanket wraps at residence in San Diego. They are then shipped by truck to the prime carrier facility or agent, then rescheduled onto another truck going to Seattle, Washington. Due to the cost savings, shipping agents like to ship truckload (TL) rather than less than truckload (LTL). After waiting for a full truck load, household goods 'A' are loaded with other household goods into the same or another truck to Seattle. Once arriving in Seattle, the various household goods are again rehandled if the truckload shipment has to be broken down for different destinations. Household goods 'A' are then driven onto a barge for ocean transit to Anchorage, Alaska. The truck is secured to the barge and the blanket wrapped furniture must endure the ocean movement. Currently there are only two ocean going transit companies serving the Seattle-Anchorage market, Totem Ocean Trailer Express and Alaska Hydrotrain. Totem is a

drive on/drive off barge and Hydrotrain is a barge carrier and railroad car carrier. After traveling 1,450 miles by water, household goods 'A' are driven off the barge to another agent who again rehandles the household goods. These goods are then resorted for distribution and placed in another truck for the final 387 road miles to Fairbanks. Once in Fairbanks, household goods 'A' are either rehandled at another agent's warehouse or delivered to the final destination for unpacking/unwrapping. [Ref. 87]

Code 2 follows the same route, but the container is handled, not the household goods. The packing is better and can withstand the ocean transit better than a blanket wrapped code 1 [Ref. 87].

Damage claim data due to bad packaging techniques are not separately recorded for either the household goods or LTL markets. However, a reasonable hypothesis of damage claims in the LTL market is that if total damages are approximately 1% of all shipments, the total damage *reported* is around $1 billion annually [Ref. 88: p. 20].

Shippers also set certain standards for damage they are willing to accept. The numbers range from one to seven percent [Ref. 88: p. 21]. Duncan Godshall, a packaging consultant, states, "A lot of shippers still swallow damages rather than make a claim. Claims are a hassle and they usually come back to haunt the shipper in the form of rate increases." [Ref. 88: p. 21].

3. Beale AFB Test

The Beale Air Force Base transportation office conducted a performance evaluation of 561 personal property shipments which were routed by code 1 or code 2. This test was conducted at Beale from 16 September, 1987 to 4 February, 1988. The Beale transportation personnel were told by MTMC that code 2 was a viable method of shipping household goods.

Based on their results, Beale concluded that the percentage factors for missed required delivery dates (RDD's) and damages for code 2 exceeded those of code 1. Table 6 and Table 7 on page 61 is the summary of performance evaluations submitted by the Beale AFB Transporation Office.

The tables show missed RDD's and damage amounts but the individual companies are omitted from the far left side of the tables. The percentage of missed RDD's for code 1 was 9 percent, determined by dividing the 20 missed RDD's by the 224 code 1 shipments. The percentage of *reported* damages was 20 percent, computed by dividing the 44 damage claims by the 224 code 1 shipments. The percentage of missed RDD's for code 2 was 24 percent and the percentage of *reported* damages was 23 percent.

Table 6. BEALE AFB CODE 1 TEST: (224 shipments)

Missing Required Delivery Date				Damage	
1-2	3-5	6-9	10+	500-	500+
			1	2	
1	3			4	1
		1		5	1
				2	
				1	
1				1	
1	1			3	1
			1	1	
				1	
1				3	
		1		4	
2			2	2	
				2	
		1		3	
				1	
	1				
1	1			6	
7	6	3	4	41	3

Table 7. BEALE AFB CODE 2 TEST: (237 shipments)

Missing Required Delivery Date				Damage	
1-2	3-5	6-9	10+	500-	500+
			1	1	
2	3	3		6	3
1	8	1	1	6	3
3				3	
2	3		1	3	
	2	1	1	1	1
1	1	1	1	5	
			1		1
3		1		2	2
1	1	1	1	3	1
	2	1		2	
1	2			1	1
1	1	1		6	1
	1	1		2	1
15	24	11	7	41	14

When a more detailed analysis of this data is conducted, there are many problems with Beale's conclusion. First, it is not the complete picture. A total of 44 moving companies participated in the test during the reported time frame. The tables do not represent a true analysis of the 44 participants. Second, of the 237 code 2 shipments evaluated, 58 of them were performed by ALFY (Airland Forwarders Suddath, Inc.). Airland Forwarders Suddath, Inc. performed 25 percent of the code 2 moves.

There is a difference in code 2 domestic and code 2 'international', better known as international door-to-door container code 4. Airland Forwarders Suddath, Inc. is not a domestic code 2 mover. Their expertise is in the international shipment market, a very different type of move. International shippers use a 180-200 cubic foot box rather than the domestic 315 cubic foot box. International shippers also use different types of crews, different packing materials, different management techniques and a different method of moving cross country. International shippers treat their domestic jobs differently than their international shipments.

Some of the movers used in the Beale test were BINL (Bekins International Lines, Inc.) and CREM (Crest Mayflower International). Both are international movers. According to Jack Thompson, all of the movers involved in the Beale test did not do a very good job and caused a lot more damage than there should have been. He stated, "Code 2 shipments are less forgiving than code 1 in reference to damage. A piece of furniture will mare more easily when wrapped in paper (code 2) than a blanket wrapped code 1" [Ref. 63].

4. Damage Claims

When comparing the amount of money paid in claims by the type of shipment, the expected conclusion is that code 2 damage claims should be lower than code 1 damage claims since code 2 is packed better and provides better security. In an attempt to disprove the claim that "There is no significant difference in the number of claims against a Code 1 move versus a Code 2 move," the pooled sample proportion method of hypothesis testing was used on a sample of data obtained from MTMC. This testing procedure focuses on two independent populations with large sample sizes. The null hypothesis is $H_o: p_1 - p_2 = 0$ (equivalently $p_1 = p_2$) which is stated "There is no difference between the number of code 1 claims per code 1 shipments and the number of code 2 claims per code 2 shipments." The corresponding alternative hypothesis, $H_a: p_1 - p_2 > 0$ (equivalently $p_1 > p_2$), is "Code 1 moves are more expensive than code 2 moves."

Table 8 and Table 9 on page 64 contain the data used for the statistical tests. Table 8 and Table 9 represent household goods movements from Conus to Conus, Alaska to Conus, and Conus to Alaska between May 1, 1986 and March 31, 1987 and May 1, 1987 and March 31, 1988. Table 9 on page 64 represents data after the increased valuation of $1.25 had gone into effect. Increased valuation means that the carrier is liable for the full depreciated value of damaged or lost articles up to a maximum amount (valuation) per shipment based on the shipment weight multiplied by $1.25 per pound. Whereas before 1987, the carriers were liable for damage or loss at a rate of

$0.60 per pound per article. [Ref. 89 : p. 6] Data used for hypothesis testing for both tables were obtained from the Military Traffic Management Command (MTMC) Code MT-PPM.

The following formulas and statistical information are quoted from Weiss [Ref. 90: p. 447] with technical assistance provided by Zehna [Ref. 91]. If the null hypothesis is true, then $p_1 - p_2 = 0$ and the standardized random variable

$$z = \frac{(\bar{p}_1 - \bar{p}_2) - (p_1 - p_2)}{\sqrt{p_1(1-p_1)/n_1 + p_2(1-p_2)/n2}} \tag{4.1}$$

becomes

$$z = \frac{\bar{p}_1 - \bar{p}_2}{\sqrt{p(1-p)/n_1 + p(1-p)/n_2}} \tag{4.2}$$

where p denotes the common value of p_1 and p_2 when H_o is true. Factoring $p(1-p)$ out of the denominator of this last expression gives

$$z = \frac{\bar{p}_1 - \bar{p}_2}{\sqrt{p(1-p)}\sqrt{(1/n_1) + (1/n_2)}} \tag{4.3}$$

This random variable cannot be used as a test statistic since p is unknown. Consequently, we must estimate p using the sample information. The best estimate for p is obtained by *pooling* the data to get the proportion of successes in both samples obtained. This is done by estimating p by the equation

$$\bar{p} = \frac{x_1 + x_2}{n_1 + n_2} \tag{4.4}$$

where x_1 = Number of Claims (Code 1), x_2 = Number of Claims (Code 2), n_1 = Number of Shipments (Code 1) and n_2 = Number of Shipments (Code 2). The $\bar{p}$ is called the **pooled sample proportion**. Replacing the p in equation 4.3 by its estimate $\bar{p}$ yields the random variable

$$z = \frac{\bar{p}_1 - \bar{p}_2}{\sqrt{\bar{p}(1-\bar{p})}\sqrt{(1/n_1) + (1/n_2)}} \tag{4.5}$$

Table 8. CLAIMS/RECOVERY STATISTICS: (1 MAY 86 - 31 MAR 87)

	Number of Shipments	Number of Claims	Amt Paid (in $)	Average	Claims To Shipments
Conus to Conus Code 1	218,041	29,864	17,601,316	589.38	13.70%
Conus to Conus Code 2	1,514	261	200,440	767.97	17.24%
Alaska to Conus Code 1	1,714	369	286,112	775.37	21.53%
Alaska to Conus Code 2	1,167	170	121,670	715.71	14.57%
Conus to Alaska Code 1	2,525	813	662,909	815.39	32.20%
Conus to Alaska Code 2	702	176	151,552	861.09	25.07%

Table 9. CLAIMS/RECOVERY STATISTICS: (1 MAY 87 - 31 MAR 88)

	Number of Shipments	Number of Claims	Amt Paid (in $)	Average	Claims to Shipments
Conus to Conus Code 1	125,537	10,112	5,401,875	534.20	8.05%
Conus to Conus Code 2	1,780	160	100,734	629.59	8.99%
Alaska to Conus Code 1	554	110	69,404	630.95	19.86%
Alaska to Conus Code 2	828	46	26,152	568.52	5.56%
Conus to Alaska Code 1	1034	214	174,425	815.07	20.70%
Conus to Alaska Code 2	431	43	41,791	971.88	9.98%

This random variable *can* be used as the test statistic and, like the random variable in equation 4.3, has approximately the standard normal distribution for large samples. The numerator of the test statistic measures the difference between the two sample proportions, and the denominator standardizes the test statistic so that the standard normal table can be used to obtain the critical value(s) for a hypothesis test.

All calculations were computed with MINITAB (an interactive computer program for statistical analysis) and a macroinstruction illustrated in Appendix L. The analysis is based on the standard accepted value of $\alpha = 0.05$ and the one-tailed upper P-value. MINITAB results are indicated in Table 10. (Appendix M through R contain all data obtained by executing MINITAB.) Minitab results of 0 indicate there is a significant difference between code 1 and code 2 cost with respect to claims per shipments. The results of 1 indicate there is no significant difference between code 1 or code 2 cost with respect to claims per shipments.

Table 10. MINITAB RESULTS

	Conus to Conus	Alaska to Conus	Conus to Alaska
1986-87	P = 0.999967	P = 0.0000013	P = 0.0001456
1987-88	P = 0.924555	P = 0	P = 0.0000004

Based on the one-tailed upper P-value, four of the six tests conducted indicate that: (1) there is a significant difference between code 1 and code 2 with respect to claims per shipments, and (2) the dollar value of damage claims under code 2 moves is less than the dollar value of damage claims under code 1 when moving from Alaska to CONUS and CONUS to Alaska. However, the data obtained from Military Traffic Management Command on Conus to Conus moves does not provide sufficient evidence to warrant the same statement except that there is no significant difference between code 1 and code 2 with respect to claims per shipments of dollar value of damage claims when moving within CONUS.

E. PALLET SIZE CONTAINERS

An alternative to the domestic household goods container may be the use of lightweight pallet size lockable wire cage containers that will fit inside a moving van or standard container. The U.S. Army Belvoir Research, Development and Engineering Center sponsored a study to investigate current commercial pallet size containers in-

cluding evaluation of materials and process technologies. They also assessed the ability of commercial containers to meet the stated military requirements. The reasons for performing this study were,

> With the ever increasing mobility of the Army, there is an increasing need for pallet size containers for a variety of uses. These range from the storage of small quantities of bulk solids and liquids to highly organized spare parts special tool kits for maintenance and repair of specific material items. This study was designed to evaluate new materials and fabrication technologies used for commercial containers as a potential source of more effective and efficient pallet size containers for the Army. [Ref. 92: Introduction]

The pallet size containers were evaluated against 19 military criteria. The highlighted items apply to characteristics needed in a household goods container. All 19 requirements are listed below [Ref. 92: p. 8]:

1. **Four-way forklift pockets.**
2. Sling lifting fittings.
3. Interior designed to accommodate adjustable drawers shelves, bins, tie-downs, and or liquid bladders.
4. **Be corrosion resistant.**
5. Be NBC resistant (protect contents).
6. Withstand NBC decontamination process.
7. **Be stackable and "nest" with similar containers.**
8. Able to be complexed with similar containers (lock together).
9. Be Palletized Loading System compatible.
10. **Operable in all climates.**
11. **Efficiently cube-out International Organization for Standardization (ISO) containers, ISO flatbed trailers, and standard Army cargo vehicle (to maximum extent possible).**
12. **Detachable wheels or casters.**
13. **Be lockable.**
14. Utilize ISO bayonets on palletized loading system (PLS) racks.
15. Efficiently cube-out air pallet (463L) design.
16. Be air transportable.
17. Be helo transportable as external cargo.
18. Be LAPES (Low Altitude Parachute Extraction System) qualified.
19. Be air-droppable.

The Army concluded that the 19 requirements would be difficult to meet in a single container design but that the requirements can be closely approached [Ref. 92: p.10]. An analysis of existing commercially available containers and manufacturers indicated that not a single vendor would be able to fully meet all requirements. Shown in Appendix S is one of the lists of commercial small container manufacturers as listed in Table A-1 in the Belvoir Army Survey. [Ref. 92: p. 78]

Since pilferage is a major problem and the weight of containers is another problem, the use of lightweight, lockable wire cages may be a viable alternative. One example includes loading household goods into a 40 x 48 x 24-inch cage, securing the goods with a lock, then loading the cage into any transportation device such as a flatbed truck[25], moving van, crates, etc. A standard 2" x 2" #2 ga (¼") welded wire container would be able to handle loads up to 5000 pounds. [Ref. 92: p. 83]

Of the 19 military criteria for the pallet size containers, the applicable items for household goods are the highlighted items listed below:

- Four-way forklift pockets
- Corrosion resistant
- Stackable and "nestable" with similar containers
- Operable in all climates
- Efficiently cube-out ISO containers, ISO flatbed trailers, and standard Army cargo vehicles
- Detachable wheels or casters
- Lockable

F. SUMMARY

This chapter described the various methods of moving household goods within CONUS. A brief history of the household goods moving industry containerization experiments was discussed. The utility of the shipping industry's standard 20-foot and 40-foot container for shipping household goods was described. Due to the economies of scale, it appears that the 20-foot standard container for use as a household goods container would not be a good choice for the domestic household goods transportation market.

In order to adequately determine which mode is the most cost effective method, better accounting records for damage claims under Conus code 1 and code 2 shipments are required. MTMC is implementing a system to track the number of shipments per mode and number of claims per mode. In this way, better statistics for analysis will be available. Chapter Five will discuss overall conclusions and recommendations.

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[25] Weather protection would be needed with the flatbed truck.

V. CONCLUSIONS AND RECOMMENDATIONS

A. BARCODING AND INVENTORY SYSTEMS

The moving industry uses two different types of methods of conducting a household goods inventory: the manual method and computerized methods. The handwritten manual method is time consuming, inefficient, and usually unreadable. In order to improve upon the current handwritten manual inventories, the following criteria need to be achieved:

- The ability to quickly perform a household goods inventory at origin.
- The ability to quickly perform a household goods inventory at destination and print any deviations from the original inventory.
- The enticement of civilian moving companies and agents to purchase and use computerized inventory equipment.
- The issuance of a readable inventory to service members.

1. Transportation Operational Personal Property Standard System (TOPS)

Consideration should be given to incorporating a service member's household goods inventory into the TOPS system. This could be done with a light pen method similar to the *ALLFAX* system. Another alternative would be to have a Government sponsored or controlled household goods agent conduct an inventory of a service member's household goods. Prior to the inventory, the agent would apply Code 39 barcode labels to the service member's household goods. Representatives at the origin ITO or personal property shipping office would apply self-stick Code 39 barcode labels to the service member's household goods. One coded label would identify one item of personal property. A pre-move label and inspection would be performed. The ITO representative or moving company agent could then scan the bar[illegible]e labels with a laser scanner and provide a clear printed inventory to the servi[illegible]er. The inventory data stored could then be loaded into TOPS for transmission to the service member's PCS destination. Upon arrival at destination, the household goods could again be scanned with a laser scanner. If there are any deviations from the original scan, a missing items list would be printed. This data could then be sent to the respective legal service for claims processing. Damage estimation would take a little longer due to estimates of repair but could also be documented.

2. Inventory Sheets

Service members should also be provided with inventory sheets for handwritten entries. Any additions and deletions to the household goods of a service member could be annotated and used as a backup source document. For example, a service member purchases new living room furniture and annotates item, cost, and year/month of the purchase on the inventory sheets. This data will be added to the new inventory sheet when a new barcode scan of household goods is conducted and a proper, up-to-date inventory is available to the service member, the transportation office, and the moving companies. Examples of inventory sheets are included in Appendix S [Ref. 93]. The following inventory sheets should also be included:

- Entrance Hall
- Kitchen, Pantry and Breaktast Room
- Hall Closets
- Cellar, Utility, Storage Areas
- Attic, Overgarage Storage Areas
- Inventory of Books
- Jewelry and Silverware
- Paintings, Prints, Sculptures and Objects of Art
- China, Glassware, Bric-A-Brac
- Garage, Outbuildings, Sports Equipment, Hobbies

3. Rates

To entice moving companies and agents into using computerized household goods inventories, a rate increase would be helpful. Military rates for household goods are generally lower than commercial rates. For instance, from the 400F ICC tariffs dated 13 July 1988, the commercial rate for 1000 pounds traveling 1901 miles is $89.60 per cwt. In the MTMC Rate Solicitation 10 (RS-10), the same 1000 pounds traveling 1901 miles has a military rate of $65.45 per cwt. This is a difference of $24.15 per cwt.

If an increase in the military rates for movers using the computerized inventories were implemented, the spread between the commerical and military tariffs would decrease and the profit margin for the movers could possibly increase. With this foreseeable increase in profits, the small independent movers would be able to invest in computerized inventory equipment, invest in more capital equipment, pay drivers competitive wages, and hopefully increase the overall quality of service.

4. Barcoding Conclusion

Eventually, the major moving companies and their subsidiaries will make the move to the barcoding of inventory. According to John Paxton, President and C.E.O.

of Intermec[26] Corp., "As part of a total, computer-based management system, these technologies permit far more efficient control of all phases of materials and information management. The return on investment (ROI) for bar-code systems therefore is typically less than one year, with impressive savings attributable to the increased speed and accuracy of this variety of processes." [Ref. 94: p. 32]

Major van lines have successfully operated computerized inventory equipment and 'off-the-shelf' technology is readily available. MTMC should consider using similar systems discussed in this thesis.

B. FREIGHT FORWARDERS

Freight forwarders are carriers that collect small, less than truckload (LTL) shipments from shippers, consolidate the small shipments into truck load (TL) shipments, and deliver the shipments to the consignee. The definition also includes household goods shipments. Freight forwarders receive 45 percent of the DOD domestic household goods revenue. The monopoly of van lines and freight forwarders is squeezing out the small independents and not allowing for a stable competitive environment. The freight forwarders are a needed entity because there are so many carriers, but not to the point of substantially increasing the market share.

The civilian household goods moving industry has strong Congressional assistance and lobbying savvy. When MTMC tries to institute changes to allow for a more equitable distribution of money and jobs, certain political entities step in to ward off 'attack' of their steadily increasing domains. Until a GAO investigative committee, or perhaps an outside investigative source, can agree on the actual usefulness of freight forwarders in the household goods moving industry, the military and civilian moving personnel will continue to disagree.

One possible way to please both sides is to use the Olympic scoring procedure to determine the base rate for bids. When bids are submitted by the movers, discard the high and the low bids similiar to the Olympics and average the remaining scores. Use the median bid as the base rate. This will help prevent the cut rate movers, which usually means cut rate quality, from undercutting the more professional movers and thereby avoiding more claims and damage to military service member's personal effects.

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26 The LOGMARS (NT) II program was bid on and won by Intermec. The program is valued at $116 million over five years.

C. CODE 1 VERSUS CODE 2

A cost benefit analysis of code 1 versus code 2 is not feasible due to the poor data available from the civilian household goods industry and MTMC. The civilian household goods industry has experimented with household good containers since the 19th century. There still does not seem to be a method of containerization for household goods that provides the needed economies of scale. One method may be the use of lightweight pallet size containers.

1. Containerization Alternatives

Since pilferage is a major problem and the weight of containers is another problem, the use of lightweight, lockable wire cages may be a viable alternative. Chapter Four, page 66 mentions 19 military criteria for a pallet size container. The applicable items for household goods are listed below:

- Four-way forklift pockets
- Corrosion resistant
- Stackable and "nestable" with similar containers
- Operable in all climates
- Efficiently cube-out ISO containers, ISO flatbed trailers, and standard Army cargo vehicles
- Detachable wheels or casters
- Lockable

Another example includes the use of 20- or 40-foot lightweight container. The originating agent could send a team to a house and conduct a detailed barcoded inventory (discussed in Chapter Two). After the owner is satisfied with the inventory, the packing team would commence wrapping, packing, and loading a standard 20'- or 40' x 8' x 8' light weight metal container. The owner of the household goods would lock the container and retain the key or combination. There is no need for anyone to get into the container until delivery at destination. The household goods container is now ready for movement by either flatbed truck, rail, or ship. There are many advantages to using a 20- or 40-foot container and only two disadvantages.

ADVANTAGES:

- Increased protection from pilferage.
- Increased protection from weather.
- Ability to use intermodal transportation.
- Switching between different modes of transportation without wasted manhours.

- Reduced materials handling of all household goods when trying to load less than truckloads (LTL) to truckloads (TL). No need to repack or rehandle household goods.
- The containers can act as temporary storage.
- Reduced costs due to the cost of reduced labor and time saved in transit each time the household goods are rehandled.
- Household goods 'A' will not get mixed with household goods 'B' and there will not be as many misrouted shipments.

DISADVANTAGES:

- Cost of containers
- Economies of scale

Who is going to pay for the containers? The containers already exist, they are just not being used for domestic household goods. The moving industry wastes time and money on the standard wooden Type II containers. Instead of repairing and replacing the wooden containers, the moving industry should invest in lightweight secure metal containers.

Perhaps MTMC should investigate the possibility of a household goods container that can be used as a pseudo MILVAN in the event of a military mobilization. Many more containers will be required than are currently available. If DOD is using *military* containers during peacetime for PCS household goods moves, the immediate shift from domestic service to a wartime scenario is available.

APPENDIX A. MTMC 1/2/88 LETTER

22 January, 1988

Directorate of
Personal Property

SUBJECT: Domestic Household Goods Freight Forwarders

All Department of Defense (DOD) Approved Domestic Household Goods Carriers

Ladies and Gentlemen:

Prior to the 1980's, there were very few freight forwarders participating in the DOD domestic household goods (HHG) program. The overwhelming majority of domestic shipments was handled by traditional motor carriers, in general, and van lines, in particular. In May of 1980, for example, there were only 17 freight forwarders with DOD approval for solely domestic traffic. Today there are 129, along with 104 international forwarders who are approved for domestic traffic, for a total of 233.

Some of the domestic forwarders are independent companies, but many are under the common financial or administrative control of a parent company. Some van lines now have as many as seven domestic forwarders under their control. These controlled forwarders normally use the parent company's van line to transport the shipments.

Freight forwarders now receive 45 percent of the DOD domestic HHG revenue, or approximately $200 million a year. Of this revenue, Code 2 shipments (those crated HHG shipments moved on general cargo flat bed trucks, the type of service traditionally provided by forwarders rather than van lines) constitute only $14 million. That means the $186 million of the forwarder's revenue from DOD is from Code 1 shipments (shipments transported loose in moving vans, the type of service traditionally provided by van lines). We believe that much of this revenue is being earned at the expense of those motor carriers who do not control forwarders; i.e. that combinations of van lines and associated forwarders are sharing disproportionately in the traffic being allocated by personal property shipping offices.

MTMC continues to receive more requests for new domestic forwarder approvals, indicating that freight forwarders could control the majority of the domestic military shipments within the next few years. Disadvantages to the program, if dominated by controlled forwarders, are:

a. Traffic will not be equitably distributed. Our policy is to award traffic to carriers with the same rates, with the result that they end the rate period (cycle) with roughly equal amounts of traffic. Having controlled forwarders gives a carrier more awards (commonly called "more turns at the wheel"), subverting our equitable distribution policy. Motor carriers, particularly the smaller ones without controlled forwarders, will suffer. With decreasing revenues, some may become discouraged and drop out of the DOD program, reducing the amount of real equipment to move military shipments.

b. Forwarders offer no additional moving capability; e.g., agency structure for packing, unpacking, and storage services, and linehaul of their own. Freight forwarders

were not originally developed to provide the type of service they currently offer DOD. Forwarders generally gathered less than carload shipments and consolidated them into carload lots destined to various points. The Interstate Commerce Commission defines "freight forwarders" (in part) as a person who "... assembles and consolidates, or provides for assembling and consolidating, shipments and performs or provides for break-bulk and distribution operations of the shipments." While it is recognized that the role and acceptability of freight forwarders have changed over time, the reality is that such forwarders do not provide DOD with any substantive capability, short of entrepreneurship, to meet its shipment and storage program requirements.

c. Inasmuch as forwarders arrange for movements through the use of motor carriers and van lines, some have circumvented the intent of MTMC's rules for restricting alternate carriage and pooling.

d. Organizations with multiple forwarders can circumvent MTMC's quality assurance programs. With six or seven forwarders eligible for traffic from any military activity, they can survive a suspension imposed due to their poor service because they still retain five or six entities with opportunities to receive traffic with their controlled companies. This is particularly unfair to those motor carriers without forwarders, who work hard to achieve good performance records and expect to be rewarded with business.

e. Large number of forwarders at any given military personal property shipping office unnecessarily complicate traffic distribution records and add an administrative burden on transportation officers. For example, at Fort Hood, Texas, 70 percent of the rates filed for shipments going to Virginia were submitted by forwarders. In this case it means maintaining records on 70 carriers and forwarders instead of 21. At the Naval Supply Center, Oakland, California, shipments to Alaska involve 159 carriers and forwarders instead of 60.

f. Case law suggests that forwarders who are admittedly in common financial and or administrative control may establish their rates without violating antitrust laws. This would give them a considerable advantage over independent motor carriers who may not discuss rates with other motor carriers because of these same antitrust laws. Although the domestic solicitation requires that "rates and charges offered...must be independently determined....," the presence of controlled forwarders in the program frustrates the intent of that requirement. The resulting abuse is that a carrier may, in essence, choose its rate at any time during the cycle rather than holding to fixed price for that period. For example, during the current interstate cycle, the rates of one carrier and its controlled forwarders ranged from 57 percent to 100 percent of the baseline rate, despite the fact that the services would be performed by the same people and equipment. At periods of peak demand, the group may make available only its firms with high rates. During slow times, the lower-priced firms may be available.

In summary, we do not believe that it is in the best interest of DOD, or the overall moving industry, to permit a situation such as this to continue. The interests of the DOD are served by dealing with carriers who provide the physical resources necessary for the actual shipment and storage of domestic household goods, have a substantial stake in the quality of service provided, and submit truly independent and fixed rates. We are announcing, therefore, that MTMC intends to:

a. Enforce the domestic carrier agent ratio rules. The DOD Personal Property Traffic Management Regulation currently reads (in part) that, "A local agent may rep-

resent four DOD-approved carriers/forwarders. No more than two may be regulated freight forwarders." This means no more than two forwarders at any time. The restriction applies even if an agent has been qualified for and receives approval to represent more than four carriers (the so-called 5th carrier exception). Full enforcement of this policy will be effective November 1, 1988. There will be no "grandfathering."

b. Establish a common financial and or administrative control (CFAC) rule for domestic traffic which will be similar to that already in effect for international traffic. The MTMC International Through Government Bill of Lading (ITGBL) Rate Solicitation currently states:

d. Common Financial and or Administrative Control (CFAC) Policy: ITGBL carriers are required to declare CFAC relationships. Carriers in CFAC may be approved in the same rate channel, but not in the same code of service to a destination rate area. Carriers failing to disclose CFAC relationships in accordance with the Service Organization Certificate (SOC) or misrepresenting their company in compliance with the SOC may be removed from the DOD personal property program.

This means that two (or more) carriers under CFAC may not file rates for the same codes of service in the same rate channels. The domestic CFAC rule will be the same. Motor carriers or forwarders under CFAC will not be permitted to file rates in the same code of service to the same destination (state) rate area. This will not preclude a situation where a motor carrier, which controls a forwarder, desires to file Code 1 rates (loose shipment in moving vans) for their van lines and also file Code 2 rates (crated HHG) for their forwarder to the same destination. This rule will become effective November 1, 1988.

c. Limit participation in the DOD domestic program (both interstate and intrastate) to motor carriers only, effective November 1, 1988. (Freight forwarders will continue to participate in the international program.)

Your comments are welcomed. If you desire to respond, please do so before March 15, 1988.

Sincerely,

Joseph R. Marotta
Colonel, U.S.Army
Director of Personal Property

APPENDIX B. HENSCH 2/8/88 LETTER

February 8, 1988

Colonel Joseph R. Marotta, GS
Director of Personal Property
Military Traffic Management Command
5611 Columbia Pike, Rm. # 423
Falls Church, Virginia 22041

Dear Colonel Marotta:

The purpose of this letter is to ask you to rescind your stated intention to eliminate forwarders effective November 1, 1989, from the DOD Domestic Household Goods Program (your letter dated January 22, 1988, see page 4), until a study has been made by MTMC and furnished to industry for comment clearly establishing the benefits of this action. In making this request, we ask you to consider the following:

At the recent MTMC/Industry Symposium held on January 28th, agents in attendance at that meeting made clear that the mere issuance of this letter would cause them to attempt to substitute motor carriers for the freight forwarders which they presently represent. You frankly recognized that the very issuance of the letter would jeopardize long-standing beneficial relationships between forwarders and their agents established in response to the requirements of the program. You further stated that no study had been made of the impact that the elimination of the freight forwarder industry would have on the DOD Domestic Personal Property Program.

Freight forwarders have invested substantial sums to develop domestic agency relationships and to hire and train personnel capable of proper compliance with the myriad of regulations imposed upon participants in MTMC's program. Recognizing that your present stated intention to elimin forwarders immediately places these organizations at risk, we therefore ask you to withdraw that stated intention until requisite studies have been completed which establish the wisdom of this course of action. Without being all inclusive, we assert that the following studies should be made prior to taking this drastic action:

1. A cost benefit analysis to establish the savings realized by the government through the use of the lower rates filed by freight forwarders. Note: I refer to the statement in your letter that 45 per cent of DOD domestic household goods dollars or $200 million dollars per year are spent for the purchase of freight forwarder services.

2. A study showing which motor carrier participants in the domestic program transport DOD shipments in vehicles owned or under long-term lease, the number and percentage of such shipments which each motor carrier transports in his own or long-term leased vehicles, broken down by origin military base and destination. This study should also establish the converse, viz., the number and percentage of shipments tendered to it which each motor carrier participant transports in motor carrier equipment owned or under long-term lease to other carriers, viz., alternate carriage.

3. An analysis of the factual situations which gave rise to the use of Code 2 to move military shipments. This is essentially a mode developed and promoted by freight forwarders and introduced into the MTMC program at the forwarders' request, it being the domestic equivalent of Codes 4 and 5 in the ITGBL program. Consequently, we ask that a study be made which would show the extent, if any, MTMC could rely on the continued availability of Code 2 service if forwarders were eliminated from the domestic household goods program.

4. An analysis and quantification of the arrangements between forwarders and motor carriers to determine the forwarders' lift capabilities obtained through contractual arrangement such as 409 agreements.

5. An analysis of shipments tendered to motor carrier participants to determine the extent to which household goods vans contain shipments of other motor carriers and freight forwarders. If our understanding is correct, few if any motor carriers do, or can economically or efficiently confine each vehicle trip load exclusively to military shipments tendered to motor carrier owning the equipment.

6. A study by questionnaire, interview, or otherwise to show whether in fact the use of freight forwarders has contributed to the efficient and economic transportation of DOD domestic household goods shipments by serving as a catalyst for consolidation of shipments.

7. An analysis of the number of motor carriers in the domestic household goods program in 1980 as compared with the number of such carriers at the present time. See your letter, page 2, paragraph a, where you express a concern that motor carriers may drop out of the program because of the existence of freight forwarders.

8. A comparison of rate levels in the domestic household goods program in effect during 1980 as compared with the present.

9. Recognizing the difficulty in enforcing CFAC regulations in the ITGBL program, please advise what enforcement mechanism will be in place to achieve CFAC compliance in the domestic program. Based upon our experience, we think it is improvident to expect a regulation to be enforced which has not been enforced since the time of issuance. Further, would you please produce any studies you have made which establishes that the promulgation of CFAC regulations in the domestic household goods program will improve the program for (a) all participants of the Household goods moving industry, (b) the Department of Defense (c) the military members, and (d) whether the application of such regulations will increase the cost of the DOD's domestic program.

10. Last, but by no means least, your letter does not describe any service problems, rate problems, harm to the military members or to the domestic military program as a result of the forwarder's participation. Certainly, before this drastic action is taken, a study establishing these facts is warranted.

Very frankly, I can tell you that I am not alone when I advise you that we are dismayed that MTMC has expressed an "intention" to eliminate the entire forwarder industry before making any finite study of any kind and before receiving any input from industry. Although a comment period is allowed, MTMC's aforeannounced intention to eliminate forwarders gives the adopted intention the appearance of a built-in, if not actual, bias by MTMC with the comment period being an almost useless drill. I re-

spectfully state that it would have been much more equitable had MTMC established the facts first, with the basis for its action being supported by appropriate studies presented to industry for comment. Since MTMC's expressed intention is to eliminate an entire class of competitive carriers, viz., forwarders, this admittedly and immediately jeopardizes existing beneficial contractual relationships between forwarders and agents developed over the years in response to MTMC's requirements. We therefore, respectfully urge that the announced intention stated in your letter of January 22, 1988, (page 4, paragraph c), be immediately rescinded. If desired, we suggest that there may be fairly substituted a fact-finding investigation encompassing studies and analyses set forth in this letter with opportunity for industry review of these studies.

I would ask for a prompt response to this letter so that we may guide our membership properly in the action which may be required to be taken.

Sincerely,

HOUSEHOLD GOODS FORWARDERS
ASSOCIATION OF AMERICA, INC.

Donald H. Mensch
Executive Director

APPENDIX C. MAROTTA 2/19/88 LETTER

19 February, 1988

Mr. Donald H. Mensch
Executive Director
Household Goods Forwarders Association
of America, Inc.
1500 Massachusetts Avenue, N.W. Suite 525
Washington, D.C. 20005

Dear Mr. Mensch:

I am taking this opportunity to provide you an interim response to the issues contained in your letter of February 8, 1988.

First, I do not intend to rescind our proposals, which were contained in our letter of January 22, 1988. That letter contains our proposed actions and the rationale therefore, and was distributed as required by law for public comment. As I stated at the January 22, 1988, Military Personal Property Symposium, we have apprised you of our proposals, provided a comment period substantially longer than that required, and have not closed our minds to alternatives. In response to the suggestion in your letter, I must state emphatically that the comment period will not be a "useless drill." In reaching a final position, we will, in good faith, carefully consider all comments received.

Second, while I may recognize that the issuance of the proposals could affect some agent-carrier relationships, it was not our intent to do so. Rather, we included specific dates in order to provide the public with the best possible understanding of those proposed actions. We feel that to do otherwise would not be consistent with our responsibility to apprise the public on the significance of those proposals and result in comment which may be less than meaningful. The potential for some agents acting prematurely would exist whether or not we included dates in our proposed actions.

Last, given, perhaps, a better understanding of our intentions in this matter, we would hope that your association will make meaningful contribution to these proposed actions during the comment period provided.

Sincerely,

Joseph R. Marrotta
Colonel, U. S. Army
Director of Personal Property.

APPENDIX D. WOHLSTETTER 2/12/88 LETTER

February 12, 1988

Colonel Joseph R. Marotta, GS
Director of Personal Property
Military Traffic Management Command
5611 Columbia Pike, Rm. # 423
Falls Church, Virginia 22041

Dear Colonel Marotta:

This letter is in reference to MTMC's announced intention in your letter of January 22, 1988, to bar household goods freight forwarders from participation in Code 1 and Code 2 domestic shipments effective November 1, 1989.

The Household Goods Forwarders Tariff Bureau (HHGFTB) as an Interstate Commerce Commission authorized rate bureau and a tariff publishing agent for the household goods forwarding industry, with approximately 90 household goods forwarder members. Seventy-five percent of our membership participates in MTMC's domestic programs.

The HHGFTB strongly urges MTMC to implement the request of the Household Goods Forwarders Association of America, Inc. to study and analyze the stated predicates for this action and to consider certain factors which were ignored, particularly the competitive benefits which forwarders have brought to the domestic program.

The membership of the HHGFTB has a common interest with the Association membership in seeing that household goods forwarders are not unfairly and unjustifiably eliminated from the domestic program. In furtherance of this objective, we wish to point out a number of representations and conclusions stated in your letter which are unsupportable or warrant empirical study.

1. You state:

"Motor carriers, particularly the smaller ones without controlled forwarders, will suffer. With decreasing revenues, some may become discouraged and drop out of the DOD program, reducing the amount of real equipment to move military shipments." (par. a, p. 2).

This statement is biased against forwarders. There is no rational basis for assuming small motor carriers are more adversely affected by declining revenues than forwarders. Moreover, there is no predicate for this statement. You have not shown that motor carrier revenues have decreased because of forwarder participation in the domestic programs and there is no support of the domestic program or that the amount of "real equipment" to move military shipments will be reduced. This implies that all motor carriers transport DOD shipments in their own equipment which is not the case. We submit that a careful study of the facts would disprove these assumptions.

2. In paragraph b (p. 2), you infer that forwarders do not contribute to the economy and efficiency of moving DOD shipments. This assumption is also

falacious [sic]. A study would show that forwarders facilitate the movement of SOS shipments by enabiing motor carriers to fill out their vehicles with profitable loads. This reduces the uneconomical miles motor carriers would otherwise have to drive with partially loaded vehicles.

3. You state:

"Inasmuch as forwarders arrange for movements through the use of motor carriers and van lines, some have circumvented the intent of MTMC's rules for restricting alternate carriage and pooling." (Par. c, p. 2).

This statement is false and an unfair indictment of the forwarder industry. Forwarders transport DOD shipments within the regulations prescribed by MTMC. In qualifying forwarders, MTMC was well aware that forwarders must employ the services of interstate motor carriers for underlying transportation. This is neither alternate carriage nor pooling which are purely motor carrier practices.

4. The other matters you assert regarding quality assurance, administrative difficulties at PPSO's and independent pricing might warrant study and require some changes in the program, but they certainly do not require the drastic action of unfairly eliminating forwarders from the domestic program.

5. Lastly, your letter completely ignores any consideration of the competitive benefits which forwarders have brought to the domestic program. We submit that this is an area which warrants study before a large number of individual competitors for fore a large number of individual competitors for domestic traffic are eliminated from the program.

The unfairness of your plan to exclude forwarders from the domestic program is underscored by the notice published in the Federal Register on February 4, 1988, which states as a conclusion, not as a proposal, that "freight forwarder participation will be phased out in two stages." (Emphasis added). Unlike proposed rulemaking, the notice does not even provide for public comments.

In closing, I must observe that MTMC seems to be marching to the tune of its own drummer. To eliminate the competition of an entire segment of the industry, which by your own statement is presently accountable for 45 percent of DOD household goods business, is in direct conflict with the principles of this Administration, the Congress and the laws of the United States. To go forward with deregulation and eliminate competition, which is relied upon as its substitute, is illogical and to single out the forwarder industry for elimination is blatantly unfair and discriminatory.

Very cordially yours,

HOUSEHOLD GOODS FORWARDERS
TARIFF BUREAU

Alan F. Wohlstetter
Executive Secretary

APPENDIX E. HHGFAA 2/24/88 LETTER

February 24, 1988

TO: The Active Membership, HHGFAA, Inc.

Dear Member:

The Military traffic Management Command (MTMC) has sent a letter to all Department of Defense (DOD) approved carriers announcing their intention to eliminate all regulated Forwarders from the domestic program and allow only motor carriers to participate in domestic military traffic, effective November 1, 1989. (enclosure 2).

Most members will agree that this proposal is wrong and unfair to the Regulated Forwarders and does nothing but replace competition by regulation. The Association has requested MTMC to rescind their stated intention to eliminate forwarders from the Domestic Program until a study is performed by MTMC clearly establishing the benefits of this action and industry has had the opportunity to comment on the study. MTMC has responded stating they do not intend to rescind their proposal.

Because MTMC has provided only part of the facts in barring forwarders from further participation in codes 1 and 2, we have attached an information paper containing additional information not provided by MTMC and a series of questions that come immediately to mind after reading MTMC's letter. These unanswered questions along with those you may generate should be considered before responding to MTMC.

Additionally, since the MTMC letter went only to DOD approved carriers, you may want to send this letter to your agents so they may become better informed on this issue and provide constructive comments to MTMC.

Sincerely,

HOUSEHOLD GOODS FORWARDERS
ASSOCIATION OF AMERICA, INC.

Donald H. Mensch
Executive Director.

APPENDIX F. AMERICAN MOVERS CONFERENCE 3/14/88 LETTER

March 14, 1988

Colonel Joseph R. Marotta
Director of Personal Property
Hq. Military Traffic Management Command
5611 Columbia Pike
Falls Church, Virginia 22041-5050

Dear Colonel Marotta:

We have reviewed your ("MTMC") letter of January 22, 1988, which proposes the elimination of domestic household goods forwarders by November 1, 1989.

Our initial impression to your letter is that your proposal has considerable potential. We are inclined to support your efforts if we are given the opportunity to meet with you and your staff to develop a workable plan that would be implemented in a time schedule agreeable to all of us. The change suggested is clearly a significant one which would impact the policies and procedures of many carriers and their agents. As well meaning as your intentions may be, this change requires the full cooperation of both MTMC and the moving industry. We firmly believe it is essential that we work together in developing a plan that ensures the accomplishment of our mutual goals.

Although the subject is not addressed specifically, we are making the assumption, on the basis of your comments about the desire for greater "capacity," that an agent for a DOD-approved household goods carrier could also become (or remain) a DOD-approved interstate household goods carrier on its own authority without violating the CFAC rules. Further, we assume that carriers which currently utilize alternative carriage or interlining on behalf of DOD and its members would be permitted to continue this practice. Likewise, the rules must take into account ICC-approved pooling agreements as well as carriers whose agents do not have ICC authority and thus lack pooling agreements.

To have an effective program, there are many questions that must be resolved: What criteria will be established for a carrier to participate in the program? It is understood, that for a slight financial consideration, freight forwarders can take action to obtain motor carrier certificates, and some carriers that presently have multi-freight forwarding companies could easily form independent companies in accordance with CFAC rules. Also, it is fairly easy for a carrier with very limited resources, for example, less than five trucks, to obtain 47- or 48-state authority and to participate equally with carriers who really do have the truck assets to fully serve the 48 states. Furthermore, with the small amount of equipment and warehouse facilities currently required of a local agent, it would be a simple matter for the local agent to expand his ability to represent more motor carriers or obtain a motor carrier certificate for his own individual use. Such developments would countermand the intent of your program, resulting in a continuation of the current "paper exercise" and in the ongoing proliferation of carriers which lack the truck assets to provide agreed-upon service.

We are also well aware of MTMC CFAC rules in the international program and some of the problems MTMC has in enforcing them. MTMC needs to clearly define CFAC and identify the rules and procedures that must be followed. MTMC should also clarify who will perform the necessary inspections and how often these inspections will be conducted.

What will be the motor carrier entry requirements?

a. Will a carrier be required to provide evidence of ICC authority.
b.Will a carrier be required to provide evidence of intrastate authority?
c. Will articles of incorporation, partnership agreements or certificate of good standing from states be required?
d. Will statement of ownership and all assumed name filings, if applicable, be required?
e. What kinds of insurance will be required for the carrier?
f. Will there be a requirement to provide a financial statement for new carriers requesting approval into the domestic program? Will the one ($1.00) asset ratio to one dollar ($1.00) liability ratio still be required?
g. Will MTMC provide the requirements to be approved as a motor carrier and will industry have the opportunity to comment prior to publication?
h. How will MTMC enforce motor carrier entry requirements?

What will be the local agency requirements?

a. What kinds of insurance will be required for the local agent?
b. Will there be any changes to MTMC agency requirements such as warehouse space, personnel and equipment, etc.?
c. What will be the requirements for a new local agent to become approved?
d. If a local agent is found not to be complying with MTMC regulations, what will be the penalties for non-compliance?
e. When can we expect to see a timetable for inspection for SIT only warehouses?
f. In the summary of your letter, paragraph a, you stated, "as of November 1, 1988, a local agent could represent four DOD approved carriers forwarders. No more than two may be regulated freight forwarders." In paragraph c, you started, "limited participation in the DOD domestic program (both interstate and intrastate) to motor carrier only, effective date November 1, 1989. (freight forwarders will continue to participate in the international program)." Does this mean that a local agent after November 1, 1988, could represent as many as four motor carriers? Will local agents continue to be able to represent four motor carriers after November 1, 1989?

Due to the complexity of developing a fair and effective program acceptable to DOD and industry, and the closeness of having to file rates for the November, 1988 cycle, it is requested that the implementation timetables in your letter of January 22, 1988, be set aside until a more specific plan can be developed. We believe the total program should be implemented on a single date and not earlier than November 1, 1989.

Historically, MTMC, AMC and the moving industry have worked together to resolve common problems. We would like to meet with you in early April to discuss the issues and questions referred to in this letter. We feel that an open and free exchange

of ideas and the discussion of mutual concerns would be beneficial to MTMC and the moving industry.

In summary, we realize we have asked a number of serious questions, some of which are not easily answered. We believe that it is very important that your proposal to change the domestic program include clear rules for a carrier to enter the program, and that definite enforcement procedures are established to ensure carrier compliance. It is very obvious to us that to make this major change to the domestic program achievable, MTMC and the moving industry must meet and work together towards a common goal. We look forward to meeting with you in early April, 1988 or at your earliest convenience.

Warm regards,

Charles C. Irions

APPENDIX G. HHGFAA 4/26/88 LETTER

April 26, 1988

Colonel Joseph R. Marotta, GS
Director of Personal Property
Headquarters, MTMC
5611 Columbia Pike, Rm. # 423
Falls Church, Virginia 22041 - 5050

Dear Colonel Marotta:

Your letter of April 19, 1988 announcing that MTMC is continuing its assessment of the comments concerning your stated intention to eliminate household goods forwarders from domestic traffic and will include discussion with the industry at the next military Personal Property Symposium on May 19th, has raised additional concerns to the membership.

The concerns are that any discussions that take place at the Symposium without alternatives being put forth by MTMC before the Symposium will result in the attendees restating their position which you have already received and are continuing to evaluate. The postponement of those actions that were to be effective November 1, 1988 has not changed the basic issue that of the total elimination of household goods forwarders from the domestic program. The CFAC and carrier agent ratio delay until May or November 1989 only allows more time for some motor carriers to adjust their agency relationships to ensure they do not lose marketshare. It does nothing for the independent forwarder who continues to lose agents based upon your January 22, 1988 announcement to eliminate forwarders.

If any studies have been performed by MTMC that support the total elimination of household goods forwarders from the domestic program or alternatives to the actions stated in your January 22 letter have been developed, we would respectfully request they be made available to the entire moving industry before the May 19th Symposium. Otherwise we will have a "Tower of Babel" situation with the many different positions on the issue just being restated. If this happens, the time could be better spent by MTMC developing alternatives or studies to support this drastic action.

We further point out that your most recent action (letter dated April 19, 1988) postponing until May November 1989 the initial phase of your program, permits the CFAC and forwarder elimination to go into effect simultaneously. This effectively dispenses with any opportunity for MTMC to evaluate whether with CFAC in place place[sic], there is any need or logical basis to eliminate competitive bids by independent household goods forwarders presently participating in the MTMC domestic household goods program.

We look forward to your response and rest assured we are willing to work with you to ensure that regulated household goods forwarders are allowed to provide competitive service for the DOD.

Sincerely,

HOUSEHOLD GOODS FORWARDERS
ASSOCIATION OF AMERICA, INC.

Donald H. Mensch
Executive Director

cc John H. Standford

APPENDIX H. HHGFAA 5/12/88 LETTER

May 12, 1988

Honorable Glenn M. Anderson
Chairman
Public Works and Transportation
Committee
2165 Rayburn House Office Bldg.
Washington, D.C. 20515

Dear Mr. Chairman:

We thank you for recently taking your time to listen to our concerns flowing from MTMC's stated intention to make drastic changes in its domestic personal property program, as set forth in its Federal Register publication of February 4, 1988, and letter, dated January 22, 1988. (Enclosure 1).

Specifically, MTMC intends to:

1. Eliminate all freight forwarders from present and future participation in this program.

2. Apply regulatory prohibitions against common financial and administrative control (CFAC) to this program.

3. Eliminate all flexibility in connection with the administration of its regulations governing the representations of carriers by agents.

The principle segments of the household goods moving industry which are co-signers of this letter oppose MTMC's scheduled implementation of these changes and ask your assistance in obtaining the needed legislative protection from MTMC's precipitate action in the form of the amendment enclosed for your consideration.

By making such drastic changes in its domestic household goods program, MTMC will dramatically change the way in which military household goods shipments have been handled by industry for the last ten years or more. The changes proposed by MTMC, which are not in response to any clearly defined service or rate problem, raise very complex issues which affect forwarders, motor carriers, agents and even owner-operators, upon whom the entire moving industry is dependent. There is no segment of the moving industry which will remain unaffected by the MTMC action. Never in recent history has MTMC announced any action which has generated so many comments, congressional letters and telephone calls asking for relief.

What is most disturbing is that MTMC has declared its intention to make these changes admittedly without making any finite study of any kind to determine whether or not it will result in any cost or service benefits to the government. In fact, such a study might well establish that MTMC's actions may result in higher rates and poorer service by prohibiting operating procedures which facilitate the furnishing of economic and responsive household goods transportation.

Further, the proposal raises many questions, which have been presented to MTMC, which still remain unanswered, and which significantly bear upon the continued ability

of the entire household goods industry to continue to provide quality service at reasonable rates.

Lastly, MTMC's stated intention of affecting these changes has already placed in jeopardy contractual relationships between forwarders and motor carriers and their respective agents which have been developed over the years in response to MTMC's requirements.

Since all efforts to have this plan withdrawn have been unsuccessful, we ask that you give favorable consideration to offering the enclosed amendment to the Defense Appropriation bill. This would have the effect of delaying these drastic changes in MTMC's domestic personal property program until MTMC submits a report to Congress establishing that they will achieve cost savings for the government and improved quality of service.

We enclose (Enclosure 2) for your consideration a proposed amendment which has the approval of all moving associations signatories to this letter. In passing, we might add that the action requested is identical to the successful action you took on behalf of the moving industry in August 1986 in the form of an amendment to the Defense Authorization bill, H.R. 4428.

We all are most appreciative of your past efforts and hope that you will conclude now, as you did then, to introduce the proposed amendment.

Sincerely,

Donald H. Mensch
Household Goods Forwarders Association of America, Inc.

Charles C. Irions
American Movers Conference

T. Peter Ruane
National Moving & Storage Association

Joseph M. Harrison
Household Goods Carriers' Bureau

Alan F. Wohlstetter Household Goods Forwarders Tariff Bureau

APPENDIX I. HHGFAA PROPOSED AMENDMENT TO MR. ANDERSON

AMENDMENT TO H.R. _____, AS REPORTED
OFFERED BY MR. ANDERSON OF CALIFORNIA

SECTION _____ REPORT ON PROPOSED REGULATIONS RELATING TO MOVEMENT HOUSEHOLD GOODS AND CARGOES.

(a) REPORT REQUIREMENT

(1) In General - The proposed regulations of the Military Traffic Management Command describes the subsection (b) may not become effective until -

(A) the Commander of the Military Traffic Management Command submits a report to Congress with respect to such regulations that includes a study and discussion of -

(i) the cost savings expected as a result of implementation of such regulations; and

(ii) the increased quality of services expected as a result of such implementation; and

(B) 90 days of continuous session of Congress elapse after the submission of such report.

(2) COMPUTATION OF TIME PERIOD - for purpose of this subsection, the continuity of a session of Congress is broken only by an adjournment of the Congress sine die, and the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of such 90 day period.

(b) DESCRIPTION OF REGULATIONS - the regulations referred to in subsections (a) are the regulations contained in the Federal Register Volume 55, No. 23 Thursday, February 4, 1988 (page 3232), that concern -

(1) the elimination of all forwarders from the domestic program;

(2) the enforcement of the domestic carrier agent ratio rules;

(3) the establishment of common financial and or administrative control (CFAC) for domestic traffic, similar to that in effect for the international program.

APPENDIX J. MTMC RESCISSION LETTER

November 22, 1988

Directorate of
Personal Property

SUBJECT: Domestic Household Goods Freight Forwarders

ALL DEPARTMENT OF DEFENSE APPROVED DOMESTIC HOUSEHOLD GOODS CARRIERS

In my letter of January 22, 1988, I advised of our proposals to implement changes in the area of common financial and administrative control (CFAC) and eliminate freight forwarders from our domestic program. The former was projected for November 1988 and the latter for November 1989. On April 19, 1988, I announced that we were deferring the CFAC action until either May or November 1989.

While these actions were being addressed, we were advised that the General Accounting Office (GAO) had been tasked to conduct a major review of the domestic program. The primary interest is determining whether adequate competition exists to ensure that DOD gets quality service at the most reasonable price. Some of the things they will focus on are (1) the advantages and disadvantages of the current rates establishment process; (2) the merits of the present system of distributing traffic to all companies that agree to match the low bidder's rates; and (3) the extent the present system fosters adequate competition.

Notwithstanding our desire to fix certain aspects of the domestic program, I feel it would be counterproductive to set into motion major changes to that program without the advantage of having the results of the GAO's review. Hopefully, that review and other internal and external proposals can result in a more comprehensive approach to the domestic program, in general, and traffic allocation, in particular.

Accordingly, I am withdrawing our proposals of January 22, 1988.

Sincerely,

Joseph R. Marotta
Colonel, U.S. Army
Director of Personal Property

APPENDIX K. COMMERCIAL SMALL CONTAINERS MANUFACTURERS

1. Adrian Fabricators, Inc.
   PO Box 518 Adrian, MI 49221
   Telephone Contact: Richard Bull (203) 269-8589

2. Air Cargo Equipment Corporation
   17923 South Santa Fe Avenue
   Rancho Dominguez, CA 90220
   Telephone: (203) 603-1996
   Contact: George M. Cleland, Marketing Manager

3. Craig Systems
   Subsidiary of Kiddy, Inc.
   10 Industrial Way
   Amesbury, MA 01913-4848
   Telephone: (617) 388-5662
   Contact: Roger Chouinard, Marketing Manager, Defense Products

4. Engineered Air Systems, Inc.
   1270 North Price Road
   St. Louis, MS 63132
   Telephone: (314) 993-5880
   Contact: W. Kent Pobanz, Group V-P, Business Development

5. Hardigg Industries, Inc.
   P.O. Box 201
   North Main Street
   South Deerfield, MA 01373
   Telephone: (413) 665-2163
   Contact: Mr. William Hamer

6. Myton Industries, Inc.
   1981 South Park Road
   Hallandale, FL 33009
   Telephone: (305) 989-0113
   Contact: Mr. Raymond Leone

7. Schaefer Systems International, Inc.
   6 Industrial Way West
   P.O. Box 325
   Eatontown, NJ 07724
   Telephone: (201) 389-3555
   Contact: Mr. Winfried Dreisbach, Sales Engineer

8. Van Leer Containers, Inc.
4300 West 130th Street
Chicago, IL 60658
Telephone: (312) 568-3535
Contact: Guy F. Morelli, V-P Commercial

APPENDIX L. MINITAB MACROINSTRUCTION

```
LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))            #P BAR
LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
LET K3 = C1(1)/C1(3)                            #P1 BAR
LET K4 = C1(2)/C1(4)                            #P2 BAR
LET K5 = (K3-K4)/K2                             #Z STAT
PRINT K5
CDF K5 C6                                       #1-TAILED LOWER PV
LET C7 = 1-C6                                   #1-TAILED UPPER PV
STACK C6 C7 C50
MIN C50 K8
LET K9 = 2*K8                                   #2-TAILED PV
LET K10 = (K3-K4)-1.96 * K2                     #CI LIMITS
LET K11 = (K3-K4)+1.96 * K2                     #CI LIMITS
PRINT K10 K11
PRINT C6 C7 K9
END
```

APPENDIX M. CONUS TO CONUS (86-87)

```
MTB > read c1
   29864      261   218041     1514
MTB > end
MTB > exec 'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))           #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                           #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                           #P2 BAR
MTB > LET K5 = (K3-K4)/K2                            #Z STAT
MTB > PRINT K5
K5       -3.99243
MTB > CDF K5 C6                                 #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                             #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM = 0.000032663
MTB > LET K9 = 2*K8                                #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                    #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                    #CI LIMITS
MTB > PRINT K10 K11
K10      -0.0528176
K11      -0.0180344
MTB > PRINT C6 C7 K9
K9       0.000065327
 ROW           C6          C7
   1   0.0000327   0.999967
MTB > END
```

APPENDIX N. CONUS TO CONUS (87-88)

```
MTB > read c1
   10112      160   125537     1780
MTB > end
MTB > exec 'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))           #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                           #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                           #P2 BAR
MTB > LET K5 = (K3-K4)/K2                            #Z STAT
MTB > PRINT K5
K5       -1.43639
MTB > CDF K5 C6                                #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                            #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM =    0.075445
MTB > LET K9 = 2*K8                                  #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                      #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                      #CI LIMITS
MTB > PRINT K10 K11
K10      -0.0220792
K11      0.00340383
MTB > PRINT C6 C7 K9
K9       0.150890
 ROW           C6          C7
   1   0.0754452   0.924555
MTB > END
```

APPENDIX O. ALASKA TO CONUS (86-87)

```
MTB > read c1
   369    170   1714   1167
MTB > end
MTB > exec 'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))            #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                            #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                            #P2 BAR
MTB > LET K5 = (K3-K4)/K2                             #Z STAT
MTB > PRINT K5
K5       4.70345
MTB > CDF K5 C6                                  #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                              #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM =0.0000012517
MTB > LET K9 = 2*K8                                 #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                     #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                     #CI LIMITS
MTB > PRINT K10 K11
K10      0.0406043
K11      0.0986221
MTB > PRINT C6 C7 K9
K9       0.000002503
 ROW     C6           C7
   1    1.0   0.0000013
MTB > END
```

APPENDIX P. ALASKA TO CONUS (87-88)

```
MTB > read c1
   110     46    554    828
MTB > end
MTB > exec 'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))           #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                           #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                           #P2 BAR
MTB > LET K5 = (K3-K4)/K2                            #Z STAT
MTB > PRINT K5
K5        8.23292
MTB > CDF K5 C6                                #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                            #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM = 0.000000000
MTB > LET K9 = 2*K8                                  #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                      #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                      #CI LIMITS
MTB > PRINT K10 K11
K10       0.108956
K11       0.177044
MTB > PRINT C6 C7 K9
K9        0
 ROW    C6    C7
   1     1     0
MTB > END
```

APPENDIX Q. CONUS TO ALASKA (86-87)

```
MTB > read c1
   813    176   2525    702
MTB > end
MTB > exec'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))            #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                            #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                            #P2 BAR
MTB > LET K5 = (K3-K4)/K2                             #Z STAT
MTB > PRINT K5
K5       3.62297
MTB > CDF K5 C6                                  #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                              #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM =  0.00014561
MTB > LET K9 = 2*K8                                  #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                      #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                      #CI LIMITS
MTB > PRINT K10 K11
K10      0.0327126
K11      0.109823
MTB > PRINT C6 C7 K9
K9       0.000291228
 ROW          C6          C7
   1   0.999854   0.0001456
MTB > END
```

APPENDIX R. CONUS TO ALASKA (87-88)

```
MTB > read c1
   214     43   1034    431
MTB > end
MTB > exec 'xpodata'
MTB > LET K1 = (C1(1)+C1(2))/(C1(3)+C1(4))           #P BAR
MTB > LET K2 = SQRT(K1*(1-K1))*SQRT(1/C1(3)+1/C1(4)) #SE
MTB > LET K3 = C1(1)/C1(3)                           #P1 BAR
MTB > LET K4 = C1(2)/C1(4)                           #P2 BAR
MTB > LET K5 = (K3-K4)/K2                            #Z STAT
MTB > PRINT K5
K5        4.91579
MTB > CDF K5 C6                                #1-TAILED LOWER PV
MTB > LET C7 = 1-C6                            #1-TAILED UPPER PV
MTB > STACK C6 C7 C50
MTB > MIN C50 K8
   MINIMUM =4.172325E-07
MTB > LET K9 = 2*K8                                  #2-TAILED PV
MTB > LET K10 = (K3-K4)-1.96 * K2                      #CI LIMITS
MTB > LET K11 = (K3-K4)+1.96 * K2                      #CI LIMITS
MTB > PRINT K10 K11
K10       0.0644549
K11       0.149936
MTB > PRINT C6 C7 K9
K9        0.000000834
 ROW    C6           C7
   1     1    0.0000004
MTB > END
```

APPENDIX S. INVENTORY RECORDS

Table 11. MASTER BEDROOM INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replace-ment cost
Rugs					
Carpets					
Chairs					
Tables					
Beds					
Mattresses					
Dressing Table					
Bureaus					
Chest of Drawers					
Dresser					
Chaise					
Desk					
Clocks					
Mirrors					
Lamps					
Light Fixtures					
Curtains					
Drapes-Shades					
Television					
Bedding					
Closet Items					
→					
→					
→					

Table 12. LIBRARY-DEN INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replace-ment cost
Rugs					
Carpets					
Chairs					
Tables					
Sofa					
Piano					
Curtains					
Cushions					
Bookcases					
Cabinets					
Desk					
Clocks					
Mirrors					
Lamps					
Light Fixtures					
Drapes-Shades					
Television					
Radio					
Closet Items					
→					
→					
→					
→					
Books					
→					
→					
→					
→					

Table 13. LIVING ROOM INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replacement cost
Rugs					
Carpets					
Chairs					
Tables					
Sofa					
Piano					
Curtains					
Cushions					
Bookcases					
Cabinets					
Desk					
Clocks					
Mirrors					
Lamps					
Light Fixtures					
Drapes-Shades					
Television					
Radio					
Musical Instruments					
Fireplace Equipment					
Closet Items					
→					
→					
→					
Books					
→					

Table 14. DINING ROOM INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replacement cost
Rugs					
Carpets					
Chairs					
Tables					
Buffet					
Cupboard					
Curtains					
Electric Appliances					
Bookcases					
Cabinets					
Clocks					
Mirrors					
Lamps					
Light Fixtures					
Drapes-Shades					
Closet Items					
→					
→					
→					
→					
→					
→					
→					
→					
→					
→					
→					

Table 15. BATHROOM INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replacement cost
Floor covering					
Mats					
Chairs					
Tables					
Lamps					
Scales					
Curtains					
Appliances					
Chest of Drawers					
Cabinets					
Medicine					
Mirrors					
Lamps					
Light Fixtures					
Drapes-Shades					
Closet Items					
→					
→					
→					
→					
→					
→					
→					
→					
→					
→					

Table 16. LAUNDRY ROOM INVENTORY RECORD

Article	Description	Date purchased	Place purchased	Original cost	Replacement cost
Washer					
Dryer					
Tubs					
Ironing Board					
Electric Iron					
Chairs					
Appliances					
Light Fixtures					
Closet Items					
→					
→					
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→					

Table 17. PERSONAL PROPERTY NOT LISTED ELSEWHERE

Article	Description	Date purchased	Place purchased	Original cost	Replace-ment cost
→					
→					
→					
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→					
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